

The M. A. C. RECORD.

MICHIGAN STATE AGRICULTURAL COLLEGE.

VOL. 9.

LANSING, MICHIGAN, TUESDAY, FEB. 2, 1904.

No. 19

NOTICE.

The Mother's Club will meet at Mrs. Snyder's next Thursday evening at 8 o'clock.

NOTICE.

Prof. C. D. Smith will address the union meeting of the Y. W. and Y. M. C. A. Sunday evening, Feb. 7. Short-course students are especially invited. All are welcome.

NOTICE.

Alumni visiting at the College are invited to call on Prof. Holdsworth at the Mechanical Building, second floor. He has some interesting facts to present to alumni and former students of the College.

ORATORICAL CONTEST.

The Seventeenth Annual Contest of the M. A. C. Oratorical Association will be held in the College Armory on Friday evening, February 5th, at 7:30 o'clock.

PROGRAM.

Music, Piano Duet.
The Hero of Khartum, W. S. Merick, Columbian Society.
Justice to the Jew, H. W. Geller, Phi Delta Society.
Alexander Hamilton, Elva R. Davis, Themian Society.
Father Marquette, Eva Keeney, Sororian Society.
Bolivar, H. D. Hahn, Union Literary Society.
Vocal Solo, H. L. Kimball.
Waterloo, D. A. Gurney, Olympic Society.
Our Mercenary Spirit, R. C. Fowler, Hesperian Society.
Martin Luther at the Diet of Worms, Bessie Bemis, Feronian Society.
Music, M. A. C. Orchestra.
Presentation of Medals, Winnie Tyler.
Judges on Thought and Composition: Prof. A. B. Noble, Ames, Iowa; Rev. W. McPeak, Port Huron, Mich.; Rev. W. H. Osborn, Battle Creek, Mich.
Judges on Delivery: Clarence Bement, Lansing, Mich.; Prof. W. D. Sterling, Lansing, Mich.; A. M. Cummins, Lansing, Mich.

The contest promises to be a very close one. The admission will be 25 cents and a large number should attend. You will have an opportunity to hear some good orations and at the same time help out the Association.

Y. M. C. A.

Mr. Charles D. Hurrey, State College Secretary of the Y. M. C. A., spoke before the Y. M. C. A. Thursday evening on "A Declaration of Warfare Against Sham and Hypocrisy." The Association room was filled to its capacity, and everyone present was well pleased with Mr. Hurrey's address.

Mr. Hurrey is a young man of ability and every Association man should meet him, for much inspiration can be had from contact with and acquaintance of such strong men.

Rev. Mr. Edwards spoke in chapel Sunday morning on "Fidelity and Love." Text, Heb. 10:23—"For He is Faithful that Promised!" The discourse was very interesting and the attendance good.

Hon. H. R. Pattengill gave one of his characteristic lectures before the Union meeting of the Y. W. and Y. M. C. A., Sunday evening. The chapel was literally packed. The lecture was inspiring—at times humorous and other times pathetic. The truths brought out and vivified were not only vital in character building, but very practical. Those present received new courage and new enthusiasm. No one should ever fail to hear Mr. Pattengill speak when the opportunity presents itself.

JUNIOR GIRLS ON DRESS PARADE.

For the first time in the history of Domestic Art at M. A. C., a reception was given to the ladies of the faculty by the Junior class in dress-making. Each student wore the gown made by her in the class-room. A good looking girl wearing a brand new gown, hand and home sewed, neatly and carefully made under expert supervision, is a sight worth seeing. About 75 took advantage of the opportunity and were more than pleased with the make-up of the gowns.

Tea was served in the private dining room which was decorated in pink and green. The corridors contained palms, rugs and screens which gave them a very pleasing appearance. The seniors acted as ushers and waiters.

Since the goods were not to be handled that particular evening, the male element of the College population was barred. It is, however, reported that Pres. Snyder secured admission but only after strenuous promises. The reception was a decided success and reflects great credit on the Junior class and the instructors in sewing.

TAU BETA PI.

The Tau Beta Pi fraternity this week initiated three members of the Junior class, W. P. Robinson, B. McAlpine and G. W. Nichols. These men comprise the full quota of Juniors eligible this year. For the benefit of the college community they undertook certain investigations with following results:

1st. The average distance traveled by a student in going to chapel from the Dormitories only is 524 feet.

2nd. The total distance traveled in a school year on school days only in going to chapel, by one student is 18,366 miles.

3rd. The total distance that will be traveled under the proposed system of compulsory "chapel attendance" is 7068.6 miles.

The distance from chapel to Woman's Bld'g, 774 feet, chapel to Wells is 512 feet, chapel to Williams Hall, 232 feet, chapel to Abbot is 579 feet. Total 2097. Average distance 524. No. students in Woman's Bld'g, 119; Wells Hall 122; Williams Hall 94; Abbot Hall, 50. Total 385.

From information received the average attendance for school days at chapel is 80.

WALTER P. ROBINSON,
B. McALPINE,
GEO. W. NICHOLS.

REPORT OF THE BIBLE STUDY INSTITUTE AT ALBION.

The first college Bible Study Institute was held at Albion Jan. 9 and 10, and was a decided success. All the colleges of the state were represented and a vigorous enthusiasm was prominent.

Dr. H. L. Clark's talk on "Qualification of a Leader" was especially instructive and beneficial. There is no doubt but that the Bible would be more carefully studied if his directions were carried out.

Prof. Goodrich said a man who had no time to study the Bible had more work than he ought to have.

Hon. T. E. Barkworth remarked that he had no time to read commentaries, but that the Bible was what he wanted.

Sec'y Buel's talks on the Morning Watch were very inspirational. He was emphatic in urging that the first half hour of every day should be set aside for Bible Study.

H. Howard's thought "I will do it right now" in which he emphasized will, and right now, is one which could be used advantageously in other study work. The addresses by Dr. G. A. Waterman, Rev. J. L. LeGear, of Lansing, and many others were great helps to the attendants at the convention.

These Institutes will be continued regularly and will certainly be very influential and beneficial to the several Y. M. C. A. societies at the colleges of the state.

THE JUNIOR ANNUAL.

The Junior class intends to publish an annual for this year in the spring term. H. S. Hunt is editor-in-chief; C. I. Auten business manager; Helen Baker, society editor; Belle Farrand, class editor; A. J. Anderson, literary editor; J. P. Haftenkamp, local editor; G. W. Nichols, athletic editor; V. R. Gardner, historian; H. F. Tuttle, humorous editor; Elva Davis, artist. The annual promises to be an interesting one and should have a large sale.

'03.

James Cooper, who worked in Detroit during the fall, has accepted a position as draftsman with the Pennsylvania Steel Co. He left a few weeks ago to enter upon his work.

ALUMNI.

With '68.

S. R. King is a farmer near Mason, Mich. He used to room in No. 17, Saint's Rest. Prof. Kedzie recently had a pleasant chat with him, both attending a trial in Circuit Court. Mr. King retains a live interest in M. A. C. and can recall many interesting things of pioneer days.

'81.

Dr. C. W. Clark, of Caro, visited M. A. C. last Wednesday. He has a son who thinks of entering M. A. C. in the near future.

With '82.

George Day called at the College on Jan. 25.

'88.

As an outgrowth of the Paris Exposition the "Merite Agricole" has been tendered by France to Wm. A. Taylor, assistant pomologist of the U. S. Dept. of Agriculture. Since Mr. Taylor is a government official it will require an act of congress to enable him to accept the honor. Secretary Hay has made a report to congress favoring the act.

'90.

E. J. Rowley is located at Harvard, Mich. He made a trip to northern Alberta last fall.

'97.

H. W. Hart is proprietor of a drug store in Lake Odessa. He paid the College a visit last week.

With '97.

B. T. Halsted, Jr., is the father of a bouncing boy. Old Ben, '73, is now a "Foxy Grandpa."

'98.

E. A. Calkins successfully constructed a \$2,000 cement bridge at Mason. He did the designing and superintended the construction of it. He has a surveying office and does a good business.

'99.

Manchester Depot, Vermont,
R. F. D. 1.

January 27, '04.

Editor of M. A. C. Record,
M. A. C., Mich.

Dear Sir: I am enclosing pay for the good old RECORD another year. A slight change of address is necessary this year as we now have Rural Delivery and the mail starts out from Manchester Depot instead of coming up to the village.

I assure you the RECORD is a welcome visitor.

The winter here is very severe. The thermometer has ranged from 30 to 53 below and plenty of snow drifts.

Mr. Johnson is kept very busy tending two large furnaces and other work attending Greenhouse.

Our boys are both well and growing.

I only wish I could see the old familiar faces at M. A. C. and note the many improvements around the grounds.

Sincerely,

MR. and MRS. CHAS. JOHNSON

THE M. A. C. RECORD.

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COLLEGE YEAR BY THE
MICHIGAN STATE AGRICULTURAL COLLEGE

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TUESDAY, FEB. 2, 1904.

ALUMNI.

'01.

G. E. Chadsey is in the Bureau of Chemistry, Washington, D. C.

'02.

Marguerite A. Nolan, in charge of Household Economics in the Idaho Industrial Institute, has an article on that subject in the January number of the Institute Gleaner. The article gives an interesting account of the work done in Idaho.

With '02.

Carl H. Smith is a senior in the Civil Engineering Department, University of Michigan.

With '03.

Scott Lovell is in the live stock business at South Lyon, Mich. He visited at M. A. C. last week while attending the masonic meeting in Lansing.

Wm. Hallack is editor of the Thompsonville News. He visited M. A. C. while on his way home from the meeting of the Michigan Press Association in Detroit.

With '04.

William Lamoreaux is attending the Houghton Mining School and expects to graduate next year. He intends to follow mining engineering as a profession.

M. A. Kane entered the Mining School last fall. He worked in the West for a year after leaving M. A. C.

F. Roth is writing life insurance for the Penn. Mutual. He is doing well and enjoys the work. His headquarters are at Lapeer.

A PRELIMINARY NOTE ON THE ASSOCIATIVE ACTION OF BACTERIA IN THE SOURING OF MILK.

DR. C. E. MARSHALL.

While aiming specifically to secure further information concerning the "Aeration of Milk," I isolated two species of micro-organisms from

the milk of our college dairy that should be as diametrically opposed to each other as possible, one was a member of the group of lactic acid bacteria and the other belonged to the peptonizing class, constantly found in our college dairy milk and producing no acidity. Frequently I have brought two different species together in milk culture and have found an alteration in results which would be secured by either, but up to this time had not thought it worth the effort to combine a species of lactic acid bacteria with one of a class so different. It is not my purpose at this time to go into a detailed study of these two species of bacteria from a cultural and biological standpoint, but rather to state as concisely as possible some of the conclusive experimental evidence which I have accumulated thus far. I hope to prosecute this work with vigor until I shall be able to give some idea of its extent and the practical bearing it may have.

The associative action is apparently indifferently understood in the fields of milk, fermentation, and pathogenic bacteriology, although it has been known for a long time that bacterial association is of variable and frequently of great importance in the application of bacteriological knowledge. A pure culture may tell if conditions are maintained, of the individual and isolated action of a bacterium, but by no means tells its action when brought into the influential company of another species of bacteria, especially if both are cultivated together in their natural environment. Analysis and synthesis should go together hand in hand, otherwise our conclusions might be like studying man apart from society in order to obtain his social relations.

The customary belief regarding lactic acid fermentation in milk is simple and has been so long established that modifications have not gained way. What we have to offer does not in any manner alter the understanding of the simple nature of fermentation of lactic acid under pure culture, but it has its bearing by its qualification of lactic acid fermentation in its application where other bacteria are involved. We have always assumed that the lactic acid bacteria would remain uninfluenced by other bacteria in milk or at most would only be retarded in a struggle, and would gradually make their way by killing off or inhibiting the growth of other bacteria to the extent of their capacity to produce lactic acid from the lactose. With this working hypothesis, bacteriologists have made much advance, but have been unable to explain many phenomena attending lactic acid fermentation in milk other than to attribute them to possible deviations, variations, alterations, exaltations of virulence, due to the disturbances of the life per se of the lactic acid bacteria.

Let us designate our cultures as follows for the sake of brevity: A = Lactic acid bacterium in litmus milk culture. When used as a starter in the dairy it was pronounced by Mr. Michels, the College Dairyman, as excellent.

B = Peptonizing bacterium, eventually producing slimy milk.

A + B = Equal amounts of a 24 hrs. bouillon culture of A and B in the same amount of litmus milk employed in each culture A and B, 100 cc. in each instance.

There is no test applied which will yield more convincing proof than to watch the culture closely

over a period of several days, for in them may be read the entire history, although not furnishing any intimate knowledge of the changes.

Making cultures with definite amounts of cultural material used for inoculation into definite amounts of litmus milk, and placing these flasks at constant temperatures, the results ought to be very apparent, if carefully observed. If it is found later that more specific data are necessary for demonstration, we shall add the details in anticipated future articles on this subject.

The history of two gross tests cultural experiments will perhaps be sufficient to illustrate what I have already found to run very uniformly in a dozen or more trials.

The cultures used were made by inoculating 100 cc litmus milk in Ehrlenmeyer flasks of 250 cc capacity with very dilute cultures of A and B, made by diluting $\frac{1}{2}$ cc of bouillon culture in 100 cc of physiologic salt solution and using definite quantities of this for inoculating. A + B received of A the same amount as culture A, and of B the same as culture B, that is,

A = $\frac{1}{2}$ cc of diluted bouillon culture A, 24 hrs. old, in 100 cc litmus milk.

B = $\frac{1}{2}$ cc of diluted bouillon culture B, 24 hrs. old, in 100 cc litmus milk.

A + B = $\frac{1}{2}$ cc of diluted bouillon culture A, 24 hrs. old, + $\frac{1}{2}$ cc of diluted bouillon culture B, 24 hrs. old, in 100 cc litmus milk.

The gross changes in the milk may be indicated by the following scheme, temperature 20° — 22° C throughout.

20 Hours After Inoculation.

A = No change other than very slight reddening of litmus.

B = No change apparent in the milk.

A + B = Litmus redder than in A but not so very marked. No change in milk.

44 Hours After Inoculation.

A = Litmus red. No other change in milk apparent.

B = No apparent change in milk.

A + B = Litmus reduced except very thin red stratum on surface. Firm curd.

68 Hours After Inoculation.

A = Litmus red throughout, no other change in milk apparent.

B = Very slight peptonization on immediate surface, but otherwise unchanged to eye.

A + B = Firm curd with whey separated. Litmus reduced except on immediate surface where it is red.

92 Hours After Inoculation.

A = Litmus red throughout. No other change perceptible.

B = Milk peptonizing rapidly. Litmus is reduced in spots.

A + B = Firm curd with whey separated as in 68 hours. Litmus has become red throughout, probably through checked growth of micro-organisms and the permeation of curd by oxygen.

116 Hours After Inoculation.

A = Litmus red in upper half, lower half reduced. Milk is beginning to lopper.

B = Almost completely peptonized. Litmus reduced except in spots on surface, where it is still blue.

A + B = Same as at 92 hours.

141 Hours After Inoculation.

A = Curd separated from whey. Litmus reduced throughout except layer on surface.

B = Milk peptonized and slimy. Litmus blue on surface.

A + B = Same as at 92 hours.

If the lopping of the milk be any criterion to the change taking place in A and in A + B, then there must be a difference of seventy-two hours, for A + B first manifested signs of lopping at 44 hours after inoculation and A did not begin to lopper until the 116th hour after inoculation. By following the changes as recorded above, the differences are plainly evident.

In the second series, the temperature varied between 23° and 24° C, two to three degrees higher than the preceding test. I am satisfied even at this writing that I am going to find material modifications with the changing of temperatures, but as yet I am not ready to report on the temperature studies with these two micro-organisms.

(Series two continued next week.)

The basement of the Horticultural Laboratory is undergoing some marked changes. The walls have been plastered and a cement floor put in on the east side. One room will be used for the compounding and testing of spraying solutions. The other room will have a dozen or more kinds of spraying pumps. Students will work here and determine the relative merits of the different makes. Steam and water connections have been made. This arrangement is another step in the progress of the department. All work is made practical. Lectures and experiments go hand in hand.

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ABOUT THE CAMPUS.

The basket ball team plays the Normalites at Ypsilanti next Saturday.

The gynasium class meets on Mondays and Saturdays. About 100 take this work.

Freshmen and sub-freshmen will contest in an in-door meet next Saturday at 2 o'clock.

The seniors in Physics are constructing a new switch board for making dynamo tests.

Albion will be here Feb. 27 and M. A. C. goes to Alma on March 12, for in-door meets.

Forty-three young men are taking lessons in wrestling. Some good wrestlers are being developed.

Nearly all of the county institutes are sending delegates to the Round-up and a large number is expected.

Prof. Bogue entertained his uncle, William Lindsey, from Gilford, Tuscola county, for a few days last week.

Students having friends who expect to attend the Round-up can secure programs by calling at the President's office next week.

The course in sugar beets began today. A. N. Clark, with '95 is here to assist in the work. The course extends to the close of the college year.

Mr. F. J. Phillips, of the Bureau of Forestry, has been transferred from Pasadena, Calif., to Beaumont, Tex., and Mr. T. G. Phillips has been called from San Bernardino, Calif., to Washington.

The Freshmen won from the Sub-Freshmen in a basket ball game last Saturday by a score of 17 to 7. Next Saturday the Juniors and Sophomores play.

The course in cheesemaking will begin on Feb. 16. The course promises to be well patronized, two Canadians being among the number who expect to come. The course covers a period of four weeks.

Prof. John Hamilton, the farmers' institute specialist of the U. S. Department of Agriculture, expects to be present at the Round-up Institute. He is interested in the good roads movement and will speak on that subject on the evening of Feb. 24.

The students in creamery work are receiving instruction in pasteurization of ripened caeam. In the use of hand separators, soured cream is often received. The cream is heated to about 170° Fah. then cooled to 60°. In this way a much better quality of butter is produced.

The experiment station has begun the licensing of fertilizer brands for the coming season. The fee is \$20.00 per year for each brand. Over \$2000.00 are collected annually. Armour & Co. has recently applied for 14 licences. Analysis of fertilizers will begin in a short time.

The mechanical department will have an interesting exhibit at the St. Louis Exposition. Student work from the wood shop, machine shop, foundry and forge shop will be exhibited. The material has been col-

lected and will be sent in the near future.

The bulletin on diseases of plants by Mr. Longyear will be ready for the printer in about two weeks. The manuscript work is all done and the illustrations are well under way. The drawings will all be new and original. The camera has been used whenever convenient and thus diseases are shown on the fruit and plants as they actually exist.

The Themian Society was entertained at the home of Miss Anna Pickett on Saturday evening, Jan. 23. A fine supper was served, and after the program the remainder of the evening was spent in playing games and dancing. The evening was glorious for sleigh riding, and every one had a highly enjoyable time. Mrs. Gingles and Miss Mack acted as chaperones.

The department of Physics enrolls 11 seniors taking electives in electrical engineering, 137 mechanical freshmen in mechanics and heat, 28 five-year agricultural freshmen, 41 agricultural sub-freshmen, 38 women sub-freshmen, 16 five-year women freshmen and 15 women sophomores. There are 11 sections in laboratory work. Everything is full from 8:00 a. m. to 5:00 p. m. and Saturday forenoon besides.

Prof. Shaw addressed the State Live Stock Breeders' Association at Urbana, Illinois, last Wednesday on the "Recent Developments in Live Stock Industry." He gave a brief review of the development of the industry in the United States, followed by a discussion of some of the

most important problems confronting the stock producer relating chiefly to the necessity for better methods of breeding and the production of quality in meat animals.

The Holstein cow, Belle Sarcastic, was killed last fall. Two guinea pigs were inoculated with fresh tubercles found on the diaphragm and died in four weeks. Two which were inoculated with old tubercles found on the omentum and which had healed over, are still alive. The tuberculin test showed the presence of tuberculosis and the experiments with the pigs simply confirm the results.

At the debating club Thursday evening, Jan. 21st, the following question was debated: Resolved, that Mr. Cleveland is the logical candidate of the Democratic party in the next Presidential election.

The affirmative speakers were Messrs. R. C. Potts and Burt Wer-muth. Negative speakers were Messrs. E. H. Adams and H. C. Owen. The debate as a whole was very interesting from start to finish; many excellent arguments being presented by both parties. The decision of the judges was for the affirmative. The general sentiment of those present was that the meeting was above the average; and it was suggested that in the future the standard of that meeting be maintained.

It is hoped that more of the student body will come and share in the intellectual feast from which they may partake by signing the constitution and attending the meetings.

HORTICULTURAL CLUB.

C. B. Cook, '88, of Owosso, gave a talk before the Horticultural Club last Wednesday evening on Strawberry Culture. Mr. Cook has had considerable experience in strawberry raising, especially for fancy markets. He began this business in New York state, but for the last few years he has been in business at Owosso, Mich.

The talk was very interesting. The speaker discussed berry raising from the choosing of a location to the marketing of the fruit.

In choosing a location for a strawberry plantation he recommended that the amateur should select one with a loamy soil rather than clay, but clayey soil is more profitable if one understands how to handle it. This is learned only by experience.

He found it more profitable to plow the mulch under than to burn it on the ground. On well balanced soil he considered it equal to commercial fertilizers.

Mr. Cook practices the most advantageous methods in his operations. His plants are set in rows which are 16 inches and 32 inches apart and 4 to 5 feet apart in the row. This method has several advantages. He can cultivate both ways and finish a row each time across the field; then during the picking season the loss by the pickers' stepping on the fruit is greatly reduced. The layering is done by the use of short handled hoes. Two or three bushels of barley is sown to the acre as a cover crop when straw cannot be had for a mulch. His fruit is marketed in the Ohio basket, wrapped in paraffine paper. In this condition he has been able to get double the market price of berries put up in the old fashioned square box. The Sample and Marshall are his leading varieties.

The talk was the more interesting because Mr. Cook spoke from personal experience, giving the practical points in strawberry culture, and those methods which brought to him success in the business.

Next Wednesday evening Mr. C. P. Reed, of Howell, will talk on peach growing in Central Michigan. All are invited to attend the Club.

A NEW FAD.

The Owen's Process Compound is supposed to cure and prevent all diseases of plants caused by fungi, insects or physiological conditions. An agent of the firm called at the College last Thursday and asked permission to experiment on several trees. A hole is bored in the tree and filled with a powdery substance. This is supposed to be dissolved by the sap of the tree and then circulated. About 5000 trees have been treated around South Haven at 50 cents per. The company is doing a flourishing business. It is needless to say that Horticulturists look askance upon this proposition. Fruit growers are earnestly advised to keep on spraying. This is a day of patent medicines and cure-alls. Beware of imitations. Bordeaux mixture will prevent fungus diseases while those caused by insects or physiological conditions can be prevented in other ways. Better take the old known to be good than pay for the new about which nothing is known. There was once an agent who sold two medicines which cured all manner of disease. One was called High-pull-a-lowrum and the

other Low-pull-a-highrum. The first was made by pulling slippery elm bark off a tree from above down and the second by reversing the pulling process. He did a land office business. Perhaps the Owen Co. has a valuable article, but until thoroughly tried we would advise farmers to let the smooth agent work elsewhere. Remember the slippery elm bark.

The mechanical department is planing the large casting recently made in the foundry. This casting is larger than can be planed without making some changes in the planing machine. The change was anticipated when the milling machine was originally designed. It involved raising the top cross-tie about five inches and lengthening out the connecting rod which operates the feed-rack. The planing of this casting has attracted considerable attention from students and visitors. The work is proceeding very successfully.

Max Beutner, who successfully coached the crack First Regiment team last season, has been engaged to handle the soldiers for the coming year. Beutner is the best man in Chicago for preparing athletes for competition.—*Inter-Ocean.*

M. A. C. people will remember Mr. Beutner as the jolly fat Dutchman who coached the football, baseball and track teams in 1899. He had a perennial smile and the ability to keep the men in the best of condition.

An interesting track team trial was held in the Armory on Saturday afternoon. The object was to bring out the new men rather than to make records. The 25-yard dash had 36 entries. Nine heats were run. Those in the final heat were Moon, Verran, Graham and Grover. Moon got first, Graham second and Grover third. The shot-put was won by McKenna at 32ft.; Moon second and Harris third. The high jump was won by Moon; Graham second, Cox third. Height, 5ft. 5 inches. In the hurdles, McKenna took first, Graham second and Steadman third. There were 24 entries for this event. The running high dive was won by Moon; Cox received second and Verran third. Two relays were run. In the first there were 12 men on a side, in the second four. The event proved very interesting. Cox, a mechanical freshman, made the best showing among the new men. Others did well and the prospects for a strong team are good. The general interest was strong.

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J. E. STOFFER, D. D. S. Office 105 Washington Ave. S. Former M. A. C. student.

R. W. MORSE, D. D. S. Hollister Block, Room 517. Citizens Phone 52, Bell Phone 396.

N. H. MOORE, D. D. S. Office 411-13 Hollister Building, Lansing, Mich. Citizens phone 475.

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D. R. H. W. LANDON. Office and residence, M. A. C. Office hours from 7 to 8:30 a. m., and 12:30 to 2, and 6:30 to 8 p. m. Sunday office hours 4 to 5 and 7 to 8 p. m. Now phone 1560.

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