

The M. A. C. Record.

VOL. 7.

LANSING, MICHIGAN, TUESDAY, MARCH 4, 1902.

No. 24

The Great Agricultural Meeting.

The meeting announced in a previous issue, the joint meeting of the Michigan Political Science Association and the Michigan Farmers' Institutes, was a great success. The weather from Tuesday until Friday morning was ideal—brilliant sunshine and warm, spring-like atmosphere. The attendance was very large, beginning on Tuesday afternoon with some 375 people and steadily increasing until on Wednesday evening the great armory was crowded to its utmost capacity. There were no disappointments in the program except that the Hon. Gifford Pinchot, Chief of the Division of Forestry, Washington, D. C., was prevented from being present. The program was somewhat systematically arranged to interest and instruct the three great forces operative on rural life, the farmer, the preacher, and the teacher—and to work toward directing and blending the efforts of all to the best advantage for the common good. The joint sessions of the two organizations extended through the evening of Wednesday; Tuesday afternoon and evening being especially devoted to education, Wednesday morning to forestry, Wednesday afternoon to the church and farmers' organizations, and Wednesday evening to agriculture and the State. The four remaining sessions were of the Farmers' Institutes alone, and had as subjects of discussion, sugar-beet raising, stock-farming, fruit and vegetables, and butter production.

HIGHER EDUCATION.

The first meeting, on the afternoon of Tuesday, Feb. 25, was presided over by Hon. Arthur Hill of Saginaw. The music for the afternoon was furnished by the choir of the State Industrial School and was greatly enjoyed by the audience.

Mr. Hill in a few introductory remarks stated that the object of the meeting was to bring together for mutual helpfulness the thinker who toils and the toiler who thinks. He expressed regret at the absence of Hon. D. M. Ferry, president of the Michigan Political Science Association, whom he eulogized as of the best type of citizenship in the State. He contrasted the two bodies gathered together. "Farmer's organizations have a propaganda; political scientists are rather academic. We point the way, you make the way. We have views, but we do not put vim into the advocacy of them." Notwithstanding this disclaimer, Mr. Hill put much feeling into his denunciation of the agitation for aid to Cuba by reducing the tariff on her output of sugar. This agitation he attributed to Havemeyer and the sugar trust, asserting that clergymen, college professors, etc., were indoctrinated by the tracts sent out from this source. [Query. What is the value of education, if the best educated classes in the State fall so easy a prey to "indoctrination" from so questionable a source? It would be interesting and instructive to know whether in Mr. Hill's opinion such lack of penetration is the rule, or whether this is an isolated case. Ed.]

"Economic Value of Industrial Education." This topic, the first on the program, was treated by President J. L. Snyder of the Agricultural College. Dr. Snyder briefly defined industrial education to mean technical education. He gave a short summary of the history of technical education in the U. S. as embodied in the land-grant schools—all originated within the last fifty years—and exemplified in the recently added technical departments of the great universities, in such schools as the Armour Institute, and in the many manual training schools.

erties and invent new uses for by-products. "It is the young technically trained men that are causing this country to forge ahead. It is impossible to exaggerate their importance to the industrial development of the country. Thus, for instance, dairy schools have been of immense utility to certain sections of the country. In Wisconsin, as the result of dairy instruction the dairy interests of the country have increased twenty-five per cent."

The increased value of the product turned out is still more important than the quantity. Here Dr.

textile fabrics, for instance, especially silks, a great quantity was originally imported from France. Now that import has been changed to export and to France itself.

England, on the contrary, has neglected industrial training and her commerce has declined. These facts England has discovered, and is earnestly striving to remedy the conditions by establishing schools over large areas.

In the amelioration of the condition of the nations, industrial education is to be the great factor.

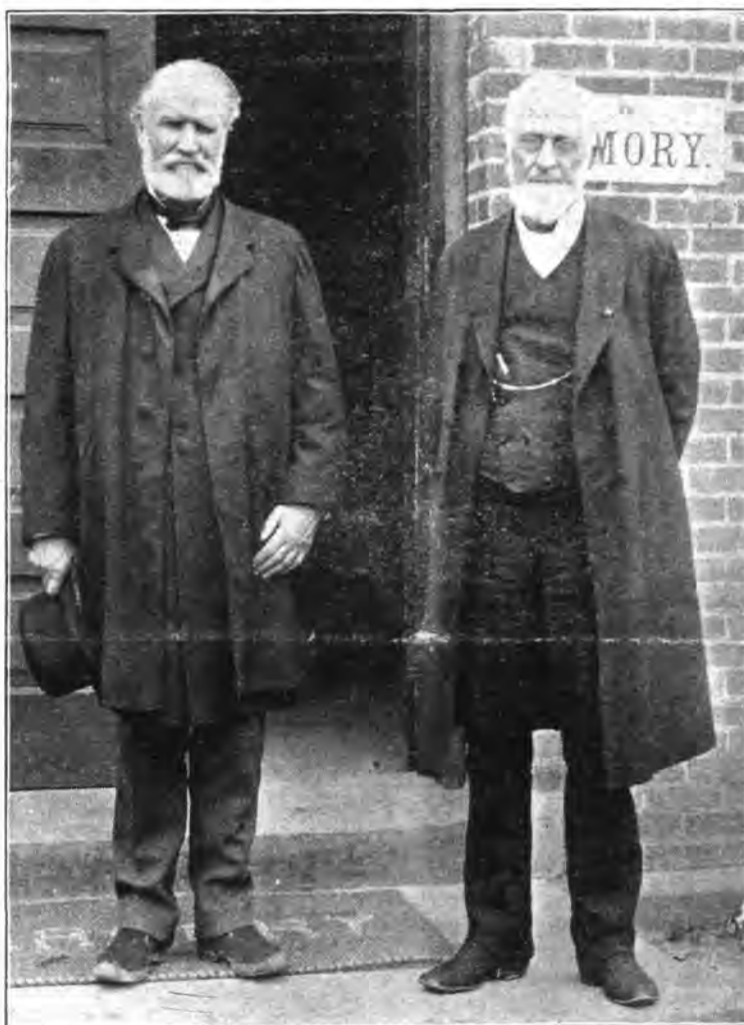
Dr. H. C. Adams, of the University, who spoke next, prefaced his remarks by regretting the necessary absence of President Angel, who, it was originally intended, should treat this topic. In discussing his subject, Dr. Adams insisted first of all that Higher Education must include besides general and technical training the prosecution of original investigation. The institutions must be centers of investigation and the teacher must be an investigator. He treated the subject from three points of view, (1) that of those who seek higher education, (2) that of those who employ those who receive the education, and (3) that of the political, social, and industrial conditions brought about.

Consideration from the first point of view he dismissed somewhat summarily, declaring the advantage reaped by the immediate beneficiary a matter of minor importance. "It is important, however," said he, "that the best and highest education should lie open to all, so that education may never become an aristocratic affair. There is no more democratic institution than the University."

Passing to his second division, Dr. Adams considered the character of the service rendered by those who have received this higher education. Specialization is the trend of the age. The product of specialization is the expert. The motive to become an expert is possibly personal, but the result does not stop with the individual. There is no possibility of producing the expert without raising the entire class.

An expert physician means a highly developed science of medicine, means discovery of causes of disease, means control of diseases. Incidentally, he stated that in this field no institution had made more important contributions to science than had the University of Michigan. He cited as a case in point, the virulence of diphtheria. It used to be dreaded as almost surely fatal. One case out of every two was the rate of mortality. Now the rate is one case in ten, as the result of technical education and investigation. Excellence is far more important to the patient than to the physician. Individually to the physician it is a question merely of relative attainment—to be better than others of his class. To the expert it is a question of absolute excellence. The good of society requires a high degree of excellence on the part of all practitioners. Hence the State is fully justified in establishing schools for high technical education.

The third head, that of the
(Continued on second page.)



SECRETARY OF AGRICULTURE
WILSON.

DR. R. C. KEDZIE.

These gentlemen were introduced to the convention as having done more for the sugar-beet industry in the United States than any other men, and by a rising vote were invited to take seats on the platform during the sugar-beet session.

He then proceeded to show the direct connection between national progress and technical training. "No nation," said he, "can afford to import articles which her own artisans can manufacture." The excellence of goods offered is directly dependent on the training of these artisans. England's commerce began to fall off as soon as the articles she exported were found to be inferior in quality to those made elsewhere. Superiority is brought about only by the application of science to the processes of manufacture. Mr. Carnegie was the first man to employ a trained chemist in connection with the management of a blast furnace. Rapidly, in every department of industry, a corps of trained specialists has been added as an indispensable part of the working force, to direct processes, to improve methods, to solve problems of handling, and to discover new prop-

Snyder indicated the great work that the experiment stations have done. He showed how the Babcock test has improved the quality of the dairy herd, how the beautiful fruit orchards of the West Shore are due to the invention of spraying as a method of fighting destructive insects and fungi, how the beet-sugar industry originated in the work of the experiment stations.

After speaking at length of the results attained in this country by industrial training, he considered results in other countries. Germany has established schools for training handicraftsmen, with the result that her ports are busy with the exporting of goods "made in Germany." Systematically she has given training in an ever widening range of activities. The German takes up a given subject with the determination to know all that the world knows about the matter and a little more besides. Of

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We would call the especial attention of our students to the fact that the College hospital has been thoroughly and scientifically disinfected, the infected bedding destroyed and everything thoroughly renovated and renewed since the supposed case of smallpox there. No one need fear infection in seeking rest or recuperation under the efficient care of Miss Ketcham. We hope that those needing her care will not hesitate to seek it, as they have been accustomed to do previously.

It will be a matter of regret to the many friends of Secretary A. C. Bird that his business interests have necessitated his resigning the office of secretary of the College. The high compliment to his efficiency paid by the Hon. Henry Humphrey and printed in another column will be heartily concurred in by all his associates. Mr. Bird will remain with us for some months yet, and will meanwhile, we understand, build a home on his property in Oakwood, near the College grounds. The College community will be glad to know that the pleasant social relations formed with him and his family are not to be severed.

We were sorry not to be able to attend the reading by Fred Emerson Brooks, poet-humorist. We understand that it was thoroughly enjoyed by a large number of people. On next Friday, March 7, the next number provided by the M. A. C. Lecture Association, a lecture by the noted pulpit orator, Thomas Dixon, Jr., of New York City, will take place in the armory. The *New York Herald* says of him: "A brilliant young preacher of intense earnestness, and a fearless independence." A special price of fifty cents for this lecture and that of Prof. A. L. Colton to follow has been made. We should advise all who do not have season tickets to take advantage of this rate.

Dr. Kedzie has allowed us to publish the following paper. We feel sure that each and every member of the College constituency will

feel a personal interest and pride in the unusual compliment to our honored friend and associate:

To our dear Dr. Kedzie:

We, the Chicago boys of M. A. C. gathered about our banquet board feel a sense of keen regret that you cannot be with us, and desire to convey to you our high esteem and heart felt wish that you may continue to enjoy in the fullest measure the fruits of your labor, which have added so much to our success.

We each and all send you greeting.

C. R. Dart,	-	Class '81.
J. H. Smith,	-	" '83.
J. A. Wesener,	-	" '88.
C. F. Wheeler,	-	" '91.
C. E. Smith,	-	" '84.
Wm. R. Rummel,	-	" '86.
L. K. Woodman,	-	" '80 to '82.
A. E. Brown,	-	" '86.
Wm. J. Meyers,	-	" '90.
E. P. Safford,	-	" '91.
A. W. Mather,	-	" '83.
H. H. Doty,	-	" '87-'89.
Philip B. Woodworth,	-	" '86.
John W. Perrigo,	-	" '94.
Joseph Beauvais,	-	" '96.
Wm. P. Hawley,	-	" '92.
W. A. Rider,	-	" '96.
M. E. Greeson,	-	" '91.
G. L. Teller,	-	" '88.
E. S. Antisdale,	-	" '85.
C. Hulburd,	-	" '92.
W. R. Goodwin,	-	" '97.
John F. Nellist,	-	" '96.
Geo. E. Simmons,	-	" '94.
Geo. N. Eastman,	-	" '96.
John D. Nies,	-	" '94.
C. E. Hoyt,	-	" -
August F. Frey,	-	" -
S. J. Kennedy,	-	" '01.
E. L. Simmons,	-	" '97.
Alex. W. Mosely,	-	" -
H. C. Skeels,	-	" '98.
F. W. Robison,	-	" '98.
Thomas F. McGrath,	-	" '89.

Chicago, Ill., March the first, 1902.

Y. M. C. A.

Prayer meeting Thursday evening was led by Burr T. Hesse. The number present was smaller than usual, but what the meeting lacked in numbers it made up in spirit and interest.

Chapel services Sunday morning were conducted by Rev. E. Sinclair Smith, pastor of the Pilgrim Congregational church, Lansing. His theme was, "I am the true vine, and my Father is the husbandman. Every branch in me that beareth not fruit he taketh away; and every branch that beareth fruit, he purgeth it, that it may bring forth more fruit." John 15:1-2.

This was one of the most practical sermons we have had this school year, and surely all present could find something of special value for themselves in this sermon.

The union meeting of the Y. M. and Y. W. C. A. Sunday evening was led by Dr. Edwards. Theme, Prayer. Dr. Edwards by a course of profound abstract reasoning proved that as there was a natural tendency in the human family to pray there was of necessity a corresponding something or power to pray to. The argument was deep and of great value to all present, the conclusion was final and convincing. Christ says, "Pray earnestly that ye enter not into temptation." Jesus Christ prayed often and the live Christian of necessity must pray "without ceasing."

H. N. H.

A Great Agricultural Meeting.

(Continued from first page.)

general services rendered to society by higher education, was still more largely elaborated under three divisions—(a) the condition of industrial prosperity; (b) the changes in the condition of rural life; and (c) the general question of what makes life worth living.

As showing the changed requisites for industrial prosperity, Dr. Adams traced the history of invention, showing that in the 18th century invention was largely an accidental matter. Now invention is itself a profession. Every great industry employs a corps of inventors, experts; and schools of higher education are necessary for the making of experts. Without such schools we should lose the ability to take advantage of our conditions. He then referred to Germany as illustrating this same condition. He showed the rivalry existing between the great nations, and how the German consular agents, the means used by Germany to enlarge and direct trade, were required to be experts and to pass rigid examinations. He showed, also, how our own university is striving to meet larger demands through its commercial courses.

Under the second division Dr. Adams laid stress on the importance of rural life to the nation and the fact that, with isolation overcome, the trend of society would be toward rather than away from the country. We are on the eve of a great social revolution whose meaning for good no man can measure. This is all brought about by the extension of electric roads, by rural mail delivery, by the telephone. These are all due to the professor working with his students in the laboratory, and this professor is possible only by the generosity of the people.

The third division, the service rendered by higher education through general culture, Dr. Adams laid even greater stress upon. "Suppose," said he, "all physical conditions perfect, what would give worth and dignity to life? Would it not be the intelligent interest in our own surroundings? And the strength of such interest would depend on the degree of intelligence. The university and the college are the guardians of that intelligence. The intercourse between these and the people should be and will be more frequent. Then there would be no question of retaining the culture departments. Our very form of government and the most sacred principles of our institutions are threatened by commercialism. The only remedy for all this is the substitution of a higher interest in life than commercialism."

Hon. H. R. Pattengill was called on to discuss the two preceding papers and spoke at some length advocating the value of the culture side of education as over against the utilitarian side. The riches of our commonwealth are not primarily our natural advantages.

"More to us than gold or grain
Are cunning hands and cultured brain."

Don't forget that the teacher is a teacher as well as an investigator. It is possible that we may over-emphasize the useful. We need men who can think logically and clearly. The power to think is the great end of education, and it does not matter whether the boy gets his education through geometry or agriculture.

THE SHIFTING OF RURAL POPULATION.

The last paper on the program for the afternoon, while not on the same subject as the others, had an interest and value of its own. It was by Dr. C. H. Cooley, and was packed with facts, some of which we briefly summarize.

The line between rural and urban population is drawn in the census at cities of less than 8000 population. On that basis in the year 1800 the per cent. of population classed as urban was 4. In 1880 it had become 22.8; in 1890, 29.2; in 1900, 33.1. The per cent. does not increase so rapidly in the last decade as in the one preceding. In Michigan the ratios have been about the same.

Taking the 161 cities that now have over 25,000 population we find that they increased 49.5 per cent. between '80 and '90, and 32.8 per cent. between '90 and 1900. During the same period the population of the whole country increased 24.9 and 20.7 per cent. Here again, although the cities are growing faster than the whole country, the difference is not as great as in the previous decade. In our own state the growth of our five large cities, Detroit, Grand Rapids, Bay City, Saginaw and Jackson, fell from 85 per cent. to 30 per cent. while that of the state fell only from 28 to 18 per cent.

In the country at large the population of settled rural districts in the northern states is actually diminishing, and has been for twenty-five years. Towns of less than 1,000 population are included as rural. In Illinois upon 66 per cent, or two-thirds of the area of the state population decreased between 1880 and 1890. In Iowa the per cent of surface showing a decrease was 43, in Ohio, 61; in New York, 83; in Michigan, 27. The only reason why Michigan shows so small an area of decrease, is that previous to 1880 only the lower part of the Southern Peninsula was opened to agriculture.

Twenty-three of the twenty-eight counties in the four southern tiers of the State show between '80 and '90, diminution of rural population. The five counties forming the exceptions are Kent, Allegan, Ottawa, Wayne, and Berrien. North of this line only one county, Montcalm, showed a decrease in that decade. Between '90 and 1900, the four southern tiers still show a decrease, all but six having fallen off. Ottawa, Wayne, and Berrien still show an increase; Kent and Allegan have fallen off, while three new counties, Ionia, Van Buren, and Monroe have increased. Dr. Cooley attributed gains in these exceptional counties to special causes; Wayne, for instance, to growth of suburban residents and to market gardening. Mr. Butterfield thinks the increase in Monroe due to the growth of the dairy industry. Possibly all increase is due to one general cause—the beginnings of a more intensive agriculture.

Ten counties in four lower tiers show a diminution of population even with the towns reckoned in. Monroe is unique, as there the rural population has increased while the towns Monroe and Dundee have fallen off.

North of the row containing Kent, Montcalm continued to lose in rural population in the last decade and several other counties are added to the list of losers, viz.: Mecosta, Newaygo, and Lake, Oscoda, Crawford and Roscommon. The towns of Tawas, Oscoda, St. Ignace, Ludington, Muskegon, and even Saginaw have lost somewhat, while the counties Iosco, Mackinaw, Mason, Muskegon, and Saginaw have increased.

The growth or decline of small rural villages is one of some interest. Of 165 incorporated places in Michigan having a population of less than 1000 in 1890, 101 gained during the past decade, 63 fell off and one remained unchanged.

Washtenaw is perhaps typical of the older agricultural districts. It contains one city of 15,000 inhabitants which has gained 50 per cent. since 1890, one city of about 7,000, which gained 20 per cent. during same time, and five villages of from 500 to 2,000, which gained together 8 per cent. Only one of these showed a decrease. It has 12 townships that are exclusively rural. Between 1850, when these twelve townships were fairly well settled and 1860, the total increase was 1600, 1860-1870 the net loss was about 100. 1870-1880 there was a small net gain of 200. 1880-1890 the net loss was 1100. 1890-1900

the net loss was about 600. In 1900 the twelve townships have a population a little less than in 1850 and 12 per cent. less than the maximum in 1880. Ten rural townships in Connecticut and ten from New York show same conditions except that the decline begins a little earlier.

The reasons for this diminution of rural population are not moral or social but economic: (1) Improvement of farm machinery, enabling the same work to be done with one-half or one-third the number of hands; and (2) Facility of transportation and communication, enabling trade and manufactures to concentrate in the large towns.

Indications are that the diminution will not continue. Figures show movement to be slowing up. Farming is becoming more intensive. If there is anything in political economy, we must be about to enter upon a period of higher land values and more thorough cultivation. The attractiveness of country life is increasing with electric roads, good country roads, the bicycle, the telephone and rural mail delivery.

THE RURAL SCHOOL.

The evening session of Tuesday was devoted to the problems of the rural school.

The first speaker, Superintendent Harvey, of Wisconsin, pointed out that the present rural school is inadequate. We find here the smallest schools and the poorest teachers. One-sixth of the rural schools average less than ten pupils. Of 137 teachers in one county, over 100 are teaching for \$25 per month or less.

"Now the problem is how can better conditions be brought about? I regard it as fundamental that we must certainly change these two conditions. In the first place, we must wipe out of existence the small schools of five, eight or ten pupils. I advocate this not in the interest of teachers or educators, but in the interest of the pupils. Sometimes farmers say to us when we advocate this idea, 'You are planning to take away from us the schools of which we are so proud.' Are you proud of such a school as I have described? Go into one of these small schools with a cheap teacher and see the work done. Send your boys and girls who have been attending these inferior schools to some school of high grade, and see how low your children will rank in comparison, and then answer me. This sentiment of pride is a worthy sentiment, but it is a mere sentiment when it cries out against the removal of the small school. I am glad that you want a school that you can be proud of, but you ought to have a school that is worth being proud of. Even on the dollar and cent basis, it is a mistake to keep up the small school. It is the most costly school. Some of you may say, 'remove the small school and you remove the educational advantages for our children.' Not at all. It used to be the cry, 'Take the public school to the children.' Today we say 'Take the children to the public school.'

"Now if we have centralization, we have, of course, to provide for getting the pupils to schools from long distances. The solution of that problem is to have them transported. You may say it cannot be done. That is what they are talking all over Wisconsin, but I notice this fact, Wisconsin is a great dairy state. We have multitudes of creameries, and I notice that every week day morning in the year, the farmers of Wisconsin with the utmost regularity manage to get their milk cans to the butter factory, while these same farmers are the men that say, they cannot get a boy to the man factory. But we have the facts on our side. Twenty states of this Union have tried transportation in a greater or less degree. These twenty states contain half the population of the United States, and the testimony of these states is unvarying in favor of the plan. There has been an increase of attendance in these centralized schools of from fifty to 100 per cent. and this too without an increase of a dollar's expense. This proposition for centralization is in the interests of your children, for it closes up inefficient schools, and makes a strong, efficient central school.

"My second point was that we need better trained teachers. How shall we get them?

We educators keep urging the necessity of the preparation of teachers, but we cannot meet the argument of the timid little school-maam who says faintly, 'How can we afford it?' Indeed how can they afford it? Can you expect a graduate of a college or normal school who has spent hundreds and possibly thousands of dollars in getting prepared for teaching to teach for \$25 a month for seven, eight or nine months a year?

"We are trying to establish county training schools for teachers. Two such schools have been in existence two years and by next fall, we will have six. Each one of these schools is for a single county and admits students only from that county. Each school gives a year's course of study in the art of teaching. The county furnishes the books. Many of these pupils live at home and drive to school every day. The experiment has gone far enough to prove to us beyond all question that the plan is a success. In the two counties where the schools have been established for two years, the schools are supplying enough graduates each year to fill the needs of those counties.

"We are also trying in Wisconsin to consolidate schools. The legislature makes a grant directly to graded schools that are not connected with high schools. We have established 280 such schools recently. As an inducement to consolidation, \$100 of state money is furnished yearly to a two-room school and \$200 to a three-room school.

"There is another important fact to which I wish to call your attention and that is, the fact that today country school pupils are mere children. In one case in Wisconsin out of eighteen schools visited, we found that practically all of the pupils were only twelve years old or younger. Only two, I think, in these eighteen schools were over that age. Why is this? Are the older pupils in the high schools of the towns and cities? No, they are not. Our statistics show that only 3 or 4 per cent. of the total enrollment of the country schools are non-resident pupils in the city schools. We have to face the fact that most country pupils stop their school attendance at twelve years old, but in the towns and cities they go on to much further than this.

"You are doubtless aware that there is a demand in many states for the teaching of the elements of agriculture in the rural schools. I agree with the advocates of this plan in their criticism of present school work. I sympathize with those who seem to think we need more school work that teaches pupils to do as well as to think, but anyone who has looked over the attempts to introduce agriculture in primary school work, must be compelled to admit that all these efforts so far have been failures. I think there are two reasons for this. First, the material for study is beyond the pupil's capacity in the lower grades, and second, the teachers themselves have not sufficiently digested the materials of study, and are not qualified to properly teach agriculture.

"But there are some things along this line that may be done. We are going to try an experiment in Wisconsin this year. In connection with our Arbor Day program we shall send out a lesson on the proper treatment for oat smut. We shall ask every teacher in Wisconsin to learn this lesson and to teach it to every pupil in the schools. Now this disease of oat smut, it has been estimated, costs Wisconsin farmers six million dollars a year, and if we can succeed in reaching the children and through the children reach the parents in this practical money-saving way, it is possible that we can demonstrate that something can be done along the line of teaching agriculture in the rural schools.

"But we must have an education for the country boys and girls by the district schools, and we must have it of the right kind; for if the boys and girls from rural schools do go to the high schools, they do not get what they need. What I would like to see is a school that shall take boys and girls from the country schools and give them about two years' work, not in ordinary school work, but in things more practical. I should want to see the boys taught the elements of agriculture, taught about soils and their properties, and how they should

be managed, taught about plants, not the ordinary botany of the text book, not science, but practical farm botany, how crops grow, how to meet crop diseases. I should want boys taught how to feed stock, how to breed stock, how to care for stock in health and disease.

"Now we have talked this thing up in Wisconsin, and last winter the legislature passed a law creating two schools of this character. The state gives one-half the expense for the school; the county the other half. These two schools are to be opened this fall, and we are now working on the course of study. While the kind of training found in these schools is intended to be of practical use, it is a kind of training that is good for anybody's children. We shall have simple farm accounts taught, manual training, so that boys may learn to use properly farm tools and farm machinery. For the girls we shall have a course in home making and domestic economy, for we leave out of schools those things that girls will use most; indeed we leave out those things that they will use nearly every moment of their lives. I attend farmer's institutes in Wisconsin, and I hear men talking intelligently about balanced rations for their cows, and I notice farmers are deeply interested in these discussions, and isn't it strange that they are so little interested in balanced rations for themselves and children? Now the girls in these schools will learn just these things. We shall have our girls learn invalid cooking and things of that sort.

"Another point about these county agricultural schools. They will become a sort of center for the farmers of the county. The superintendent of such schools must be a man competent to speak with authority about agricultural matters. There will be experimental plots of ground. The children will not only learn practical things, but they will take home to parents advanced methods.

"So to sum up the thoughts I leave with you for the improvement of our rural education: First, consolidation of schools; second, transportation of pupils; third, the county training school for teachers; fourth, the county agricultural school. I do not claim that these movements will solve the problem, but I do claim they are helpful, and that they can be done, for they are being done."

Supt. Delos Fall, of Michigan followed Mr. Harvey, urging a liberal education for the country boy. This liberal education he defined as a good high school education. "The demands on our children," said he, "will be those of the middle of the 20th century, and a high school education is the very least equipment we can afford to furnish them with to meet these demands."

Mr. Fall then presented his argument on expense. For only one-sixth of the country pupils the farmers are paying in non-resident tuition to high schools \$88,000. Add to this for transportation, extra clothing, board, and books, an average expense of not less than \$100 per year per pupil, and you get a large sum. Suppose we cut this just half in two and allow \$50 to sustain a pupil one year at a city high school. Multiply the 17,000 non-residents by 50 and you get \$850,000. Add to this the \$88,000 and we have nearly one million dollars, if you add also the school tax paid at home. This sum alone would suffice to maintain the country high school at your own home.

Then consider how far no added expense the high school would be brought within reach of the other five-sixths not here reckoned in.

Another advantage would be the change in the character of the high school. The city school attempts impossible things. It does not serve its purpose. In a class in geography a visitor asked, after being told that the earth is composed of land and water, "Did you ever see any land?" The class didn't know. "Ever see any water?" One pupil said, "Yes." "Where?" And the pupil pointed to the blue on the map. The visitor brought the boy to his senses by asking him to drink some of that water. This was narrated to show the artificiality of the city school and its lack of adaptation to the needs of the country. Greatness cannot be developed on a twenty by eighty city lot. We must have radical changes in the city high school, and the rural high school will be the means of bringing about

a nearer approach to the ideal of true education. The rural high school will be of such a nature that the non-resident tuition will go in the opposite direction from that now found.

Mr. Fall emphasized the necessity for consolidation shown by Mr. Harvey, giving examples from his own experience. Of eight districts in Berrien county, none had an attendance of over 13; one registered six pupils. The average was eight.

The question is asked, "Why not improve the district school?" The requirement now upon one teacher is to teach all the subjects in eight grades. It cannot be done. How, then, is it possible to require two grades more?

THE FORESTRY QUESTION.

Wednesday morning brought the first and only disappointment in the program. The Hon. Gifford Pinchot, who was announced to speak on the condition and significance of the forestry movement, was detained at Washington.

Hon. E. P. Allen, who presided at this meeting, in an opening address, said:

"This question of forestry has not attracted the attention of the masses until recently. Our fathers came to Michigan with their axes in their hands confronting great forests. The forests threw down the gage of battle and man was compelled to fight. Many a pioneer went to the grave, because in the terrible work of destroying the forests, he destroyed himself. Out of these forest lands were made fertile farms, and almost treeless plains, but now we have begun to find that God knew more than man about the economy of nature, and that a tree is as important as a man in its place. We have found that we must build up where our fathers tore down. We must restore the climate in southern Michigan to its normal, for it is a question in southern Michigan as well as in northern Michigan. We must build for the next generation."

Mr. G. B. Sudworth, who read a paper in the place of Mr. Pinchot, spoke at great length of the era of sentimental propaganda and the era following of scientific investigation and education. He gave a detailed statement of the development of the bureau of forestry and its plans. Much of the details given in the paper may, he said, be found in circulars 21 and 22 issued by the bureau.

Hon. E. A. Wildey, commissioner of the Land Office of Michigan, gave an interesting talk on the Forestry Problem in Michigan. He urged the establishment of a forest reserve. Michigan, from its mines and forests has made more millionaires than any other State, and has received less from them.

He went on to show the immense demands made today on forest products. We can give only one illustrative fact. The Michigan Central railroad uses annually over one million ties, and to get them strips over 4,000 acres annually. Yet no one is planting timber to replace this crop harvested. No other crop pays so well. He cited a case of 35 white pine trees planted which in 35 years brought nearly \$1.50 per tree. He paid a high compliment to Hon. C. W. Garfield, president of the forestry commission of the state, and explained what the commission was doing in the matter of a forest reserve. This reserve consists of 47,000 acres in 12 townships in Crawford and Roscommon counties. In it are the headwaters of the most important river system in the state, 700 to 800 feet above the level of the lakes and hence most important for water power. The rivers are the Thunder Bay, the au Sable, the Tittabawassee, the Muskegon and the Manistee. He showed the importance of such reserves through the present condition of the Kalamazoo river—much shallower and more variable than in former years. The commission has still comparatively little power to control these reserves. It is desired that the people be educated to demand larger control from the legislature. To show what can be done in a comparatively short time he showed a section from a cottonwood tree grown on a huckleberry marsh in 25 years. The tree was 81 feet high and 36 feet to the first limb. It grew in thick timber.

Prof. C. A. Davis in discussing the question pointed out that one-sixth of the area of

the State is worse than idle. It is capital that is a menace instead of a help. "If we knew a farmer who let one-sixth of his farm lie idle we should consider him a poor business man. Can we regard the State any differently?"

Mr. Garfield was called upon and elaborated the matter of money returns from tree planting. Fifty-two years ago a man bought for a yoke of oxen 80 acres of land seven miles from Grand Rapids. The land was covered with little pines about the size of the arm. One year ago, said Mr. Garfield, a check went through a Grand Rapids bank for \$8,000 in payment for the timber on that 80 acres of land. It is worth while to grow timber on poor land, and the commission is trying to set an example on its reserves. We must make these six million acres of delinquent land produce something. The millionaires should endow pieces of land where nature can grow forests and manage them. The people should stand by the Forestry Commission in its efforts to solve this problem.

In the discussion, which was animated and interesting, it was brought out that the Carolina Poplar would produce in 15 or 16 years trees 7 feet in circumference four feet from the ground; that it cost the State yearly \$66,367 to advertise these delinquent lands; that a tree planted begins very soon to yield money return in the shade for stock, the shade increasing the flow of milk in the dairy herd; that the state encourages planting of trees on the road by an allowance on the road tax; and that in 18 years sugar maples will yield returns in sap.

FARMERS' ORGANIZATIONS.

The afternoon of Wednesday was taken up by two papers on organization.

Mr. A. B. Cook, President of the State Association of Farmers' Clubs, in introducing Mr. Horton, the first speaker, stated that perhaps the topic of the "Need and Possibilities of Farmer's Organizations," suggested that there is a need for them that is not supplied, but such a conclusion is erroneous. We have in Michigan two such organizations which are living examples of the possibilities of farm organizations. Together the granges and farmer's clubs have 600 local organizations. This co-operation among farmers has reached large proportions, but there is need for still more of it.

Mr. Horton very earnestly emphasized the need for farmers' organizations on the basis (1) of the maintaining of a sufficiently high standard of social attainment to make and keep the farmer the peer of the best of our people, (2) of an intellectual training for his business and for the exigencies of public affairs, (3) of knowledge of the business and markets of the world such as will enable him to obtain more of the possibilities and enjoyments of life, (4) of such influence upon the body politic as will banish fraud, and encourage legislation that gives the greatest good to the greatest number. The farmers constitute 40 per cent. of our population and should have proportionate influence in legislation. Nor should such influence be feared, for the farmer is by nature patriotic, conservative, and wise.

As to the possibilities of such organization. Mr. Horton demonstrated this by an appeal to the history of such organization within the past 35 years. The principles on which the Grange was organized were given by Mr. Horton as follows:—

- (1) The ennoblement of labor and the fraternity of the producing classes.
- (2) Mutual instruction and the lightening of labor by diffusing a better knowledge of its aims.
- (3) Social culture, as also mental and moral development.
- (4) Mutual relief in sickness and adversity.
- (5) Prevention of cruelty to animals.
- (6) Bringing nearer together the producer and the consumer.
- (7) Prevention of litigation through arbitration.
- (8) The overthrow of the credit system.
- (9) Building and fostering home industries.

As another successful form of farmers' organization, Mr. Horton traced the history of Farmers' Clubs. The granges and the

clubs work harmoniously side by side for the same general purposes.

The limits on farmers' organization were defined as political and religious. These questions should not be attempted, except in an educational way, as freeing the farmers from the dictation of the bosses.

Mr. Horton closed with a strong plea that these organizations should stand against centralization of district schools as urged in a previous meeting.

THE COUNTRY CHURCH.

One of the most remarkable addresses of the whole meeting was that delivered by Graham Taylor, of the Chicago Commons. It was not an organized unified discourse, but it contained many admirable thoughts, excellently said. He spoke from a conviction born of direct, living contact with the most hopeless problems of social life.

Dr. Taylor commenced by denouncing the "fatal facility with which men forget the purpose and reason for the existence of established institutions." The institutionalism which substitutes means for ends and subverts the ends in slavishly serving the means is the very insanity of history. Examples were found in commercialism, which, substituting competition for co-operation, sacrifices the many to the few and brings about the death of trade; in the schools and universities, which making knowledge an end instead of a means and apotheosizing culture for culture's sake, fail to minister to the life of the people. Next in meanness to an aristocracy of wealth is an aristocracy of intellect too often prevalent among half-cultivated people who "fall short of knowing enough to know what is yet to be known."

This tendency was also found in the church which seeks to build itself up out of a community instead of seeking to build up the community out of itself, thus creating the paradox of a community of Christians instead of a Christian community.

Dr. Taylor then traced the history of the church, beginning in New England, as the center of every community, and of its whole life. He showed how the problem had been changed by immigration and migration, until the country church was left to one side of the stream of human activity, cut off from the masses (1) by the diversity of language; (2) by diversity of traditions; (3) by multiplicity of sects. Forty-four per cent. of forty and more townships in Vermont (Vermont, the most American of all the States) never go to church, while in that same state the churches were spending \$150 for each man, woman and child of the population.

Country life suffers from lack of social life. This it is the church's function to provide. It should have (1) a vision of its social functions, (2) a far-sighted view of denominationalism, (3) a power of generating public spirit, the spirit of cross-bearing.

In discussing these social functions, Dr. Taylor insisted that the church should master the facts to be dealt with. In this connection he showed two charts made by young preachers (one in a city, the other in the country), recording the actual facts of the neighborhood—recording for instance, the number of people in each block, (2,500 inhabitants in one block on one map), the location of each saloon, etc. He showed the varying methods of real service by which the saloon appeals to its community; the educative position of the theatres in the slums, etc., etc. "We must get more worldly not less so."

He laid great emphasis on the evils of denominationalism, showing the demand for centralization. "The division of the forces of righteousness is the greatest bar to progress. We can't pray alike, but we can have the unity of the spirit of prayer." The final test of the usefulness of the church is the attitude of denominations toward each other. The view of the church which he deprecated, he described (quoting from Dr. Huntington) as a little working model kept under a glass case, provided with its own little boiler and its own little dynamo, the admiration of all who look at it, but by no means and under no circumstances to be connected either by belt or cable with the throbbing, vibrant, religious forces of the outer world throughout broad America, lest they wreck the petite mechanism by the violence of their thrill."

"The cause of America is the cause of the world, and the cause of America rests on the shoulders of the Christian church. The ideal of each Christian should be to help make his district a better place for the next boy to be born in, for the next girl to be reared in. In the country, believe it or not, as you may, are found as desperately corrupt politics as in Chicago. It is only a matter of relative scale of operation."

Mr. K. L. Butterfield, called on to discuss the preceding papers, said that he preferred to express his opinion of the idea on which the meeting had been arranged. This idea was to bring together into active sympathy all institutions that are trying to make country life more attractive. These organizations he classified under three heads—(1) religious—the churches, the Y. M. C. A., the Sunday school, etc.; (2) educational—the schools, the farmers' institutes, the Home Reading Circle; (3) business—the granges, farmers' clubs, dairy associations, stock-breeding associations, etc. No man would do away with any of these; but enthusiasts say each should be the center of activity. It is beyond controversy, however, that we must have all three, and that no one can solve all the problems of rural life. There are some things that each cannot do. But cannot each be brought both to see the value of the work the other is doing, and to sympathize with such work? Can we not have a great federation of churches, schools, and farmers' organizations? Such has been the underlying conception of these meetings, the first formed with such an idea, under the joint auspices of the Michigan Political Science Association and the Farmers' Institutes. Is not the idea worth perpetuating, and while another joint meeting of these two particular organizations is not probable, shall we not request that the idea be perpetuated in some form? [A resolution (see resolution 2) embodying such a request was subsequently offered and unanimously passed.]

Rev. Mr. Melendy was called upon and gave an interesting account of his labors among western miners.

WHAT THE GOVERNMENT IS DOING FOR THE FARMER.

Governor Bliss was obliged to be absent from the evening session and Pres. Snyder acted as chairman. Mr. E. A. Prouty of the Interstate Commerce Commission, Washington, D. C. was the first speaker introduced, his subject being "Dependence of Agriculture on the Home Market."

Mr. Prouty began his address by saying that "among the factors of great interest to this country the farmer stands first, the railroad, second. He then proceeded to show the relations between these factors. "The railroad," he said, "determines the profit to the farmer of his commodity. As an illustration of this point, the statement was made that one dollar a ton has been charged by the railroads for transporting hay from Michigan to Boston. This, being an excessive rate, makes the raising of hay by the Michigan farmer, for transportation, unprofitable. Again, by reason of a just freight rate Nebraska creameries can compete in the Lowell, Mass. markets with those of St. Albans, Vermont. Hence freight rates determine prosperity. The farmer unlike other classes cannot combine. He is at the mercy of corporations."

The speaker referred to the combination effected by the Great Northern, Northern Pacific and Burlington roads. Seventy-five per cent. of the business of the first two named is competitive. By combination a higher rate will be charged and poorer service rendered, although the promoters claim that the freight rates will be lowered. It stands to reason that combination is brought about for the increasing of revenues. Revenues are increased by higher rates, not by increase in business or by decrease in expenses. "Law," the speaker said, "is powerless to prevent combination, but it can adjudge rates and should do so because the railroad is a public servant."

Secretary Wilson followed Mr. Prouty and spent the most of his time in explaining the methods pursued in the Department of Agriculture. "The world," he said, "has not taught us much about agriculture. Economy has, until recent years, been the

watchword in the U. S. Department of Agriculture. So at the beginning of my administration," he continued, "I was forced to turn to agricultural college graduates for scientists in agriculture."

"Tobacco was one of the first products investigated by the agricultural scientists. It has been found that the best Sumatra tobacco can be raised under cloth in the U. S. thus preventing the annual importation of thousands of dollars worth of this product. The same is true of rice. In 1903 rice will be exported from the U. S."

In the investigation of plant diseases no expense has been spared. \$10,000 was spent in 1901 for the investigation of a cotton disease, prevalent in the south. Diseases of the peach are to be investigated likewise, the San Jose scale, an enemy to the peach, having already been found to originate near the great wall of China in the Yang tse valley. The best methods of producing American butter for exportation are being thoroughly considered. The Danes, by reason of feeding their cows a more carbonaceous ration, make a butter for sale in the Orient better adapted to the hot climate. This fact is being brought home to the American farmer. The guarding against the importation of diseased cattle is another subject receiving careful attention.

"For all these investigations," the speaker said, "young men from the colleges are trained further in the department at Washington, often being sent to the ends of the earth to get exact data. All this has necessitated an increased expenditure, which will soon reach the \$1,000,000 mark. As a result of these investigations the peoples of the new possessions are being taught economical methods of raising the natural products of their soils, many of which products cannot be raised in the U. S."

The secretary stated that ere long the daily weather bulletins would reach the farmer with his mail. He expressed his faith in the value of farmers' institutes, closing his address with an appeal to Michigan farmers to make use of the beneficial by-products of the sugar beet as a feeding ration.

Prof. C. D. Jones, of Ann Arbor, then discussed the "Dependence of Agriculture on the Home Market. He believed that each farming community should be self-supporting, that the village should be a center for the manufacturing of all the articles possible to its environments, thus as far as possible shipping out the manufactured product. For example, where fruit and vegetables can be raised, the canning factory should be started; where dairying is profitable, the creamery should be operated. This argument against the non-segregation of classes, though somewhat curtailed by reason of the lateness of the hour, was not the least interesting number on the program.

The music by the M. A. C. band during the session was much appreciated by all. Sec'y Wilson took occasion to say that during the selections he imagined himself to be listening to the Marine Band on the White House grounds.

RECEPTION.

The reception in the Women's Building, following the session was very informal and consequently much enjoyed. Pres. Snyder, Prof. Smith, Sec. Wilson, Miss Gilchrist, Mrs. Smith, Pres. Marston and Mrs. Snyder were in the receiving line. A large number of the delegates and of the students and faculty met the Secretary who seemed to have a genuine interest in all whom he met. Ice cream and cake were served by the women's department, after which the company dispersed.

SUGAR BEETS.

The session Wednesday evening was the last of the joint sessions of the Political Science Association and the Farmers' Institute, and with the Thursday morning session began the meetings of the Farmers' Institute alone. The morning session was devoted to sugar beet raising. Prof. J. D. Towar was the chairman and suggested that Secretary Wilson and Dr. Kedzie, the men who had done most for the sugar beet industry, should be invited by a rising vote to take places on the platform.

W. H. Gilbert, of Lansing, spoke on the "preparation of the soil and seeding." He

urged thorough preparation of the soil with plow, roller, harrow, and pulverizer. Beets must have a firm soil. Sow plenty of seed and don't transplant.

The second speaker, on "Thinning and Cultivating," was C. T. Richards, of Alma. He insisted on early thinning. The cultivator should be used to keep down weeds and preserve moisture. Thin to a distance of nine or ten inches. One person has been known to thin an acre in two days. Have thinning done by the row.

J. D. Suydam, of St. Louis, spoke on "Harvesting." In topping place two men together and use two bushel crates. Have topping done by the row. Thirty-two to forty rows make one row of pits. Cover first with leaves, then with earth, then with leaves again.

In the discussion the speakers explained that the rows spoken of were 40 rods long, and the pay per row for thinning 12½ cents and 16 cents for topping.

Professor Towar, on request stated that experiments showed that in eight weeks of such storage in piles, the beets lost 16 per cent of actual weight, but increased 12 per cent in sugar content. Longer storage showed loss in both weight and percentage of sugar.

It was urged that beets be fully matured before being lifted.

Secretary Wilson thought that beet tops should not be fed, because if left on the ground they restored to the soil the salts taken from it. Feeding the pulp is the correct thing. With silage it forms a good ration.

Mr. C. C. Lilly of the *Michigan Farmer* took issue with Secretary Wilson on the ground that the leaves made good silage and the manure, if restored to the field gave back the fertilizing product; he also urged that to make a balanced ration, with beet pulp should be fed bran or cotton-seed meal.

RESOLUTIONS OFFERED THURSDAY MORNING.

I. *Resolved*, That this convention, embracing the Michigan Political Science Association and the Michigan Farmers' Institutes, return the cordial greeting of the American League for Civic Improvement; and wishing them abundant success in their work, hereby extend to them the right hand of fellowship.

II. *Resolved*, That this joint meeting of the Michigan Farmers' Institutes and the Michigan Political Science Association cordially approves of the idea on which this meeting is based—that of coöperation among all the agencies of rural progress, including the church, the school, and the Farmers' organizations, and, further, that we welcome any reasonable effort that may be made by any individual or organization having in view the betterment of rural life. And we especially request the officers of the Agricultural College and Farmers' Institutes and of the Political Science Association to take such steps as seem to them wise to perpetuate state and local conferences similar to this one, in which the leading idea shall be to advocate the hearty coöperation of all individuals and organizations that are genuinely interested in rural progress.

III. WHEREAS, the attendance at Michigan Farmers' institutes this year has been the largest for some years, if not in their history; and

WHEREAS, this is ample evidence of their value in Agricultural Education;

Resolved, that we express anew our approval of institute work and pledge it our continued support, and recommend its extension through reading and lecture courses.

IV. *Resolved*, that the thanks of this convention be especially extended to Prof. H. C. Adams of the University and Prof. C. D. Smith

of the Agricultural College for the interesting and profitable program which has been provided for this joint meeting; and that this convention further extend their thanks to the Agricultural College for the cordial welcome given and excellent entertainment provided.

J. H. McDONALD,
K. L. BUTTERFIELD
J. W. HUTCHINS,
Committee.

At a later time the following resolution was offered by Nathan Allen of Alma and adopted by a large majority vote.

"We, representative agriculturists, at the meeting of the Michigan Farmer's Round-up Institute, do sincerely believe that the lowering of the duty at the present time on sugars would be a lamentable, serious, and possibly death blow to our sugar-beet industry: Therefore, be it

Resolved, that we earnestly entreat and implore our President and Congress to stand by and protect the tillers of the United States' soil by retaining the present duty on sugars, thereby giving to our farmers and laborers one of the most profitable branches of agriculture we have ever had the privilege of enjoying.

STOCK RAISING.

T. G. Adams, of Shelbyville, was chairman of the afternoon session. The Misses Barrows, Crossman, and Barton opened the meeting by a piano selection, after which Prof. Ferguson discussed "The kind and quality of stock to raise."

Prof. Ferguson said in part: "Because of the different conditions which the farmers in different sections of Michigan have to face, I do not believe any definite policy for stock raising can be laid down. The southern portion of Michigan is adapted to hog raising, the middle portion to dairying. The Michigan farmer should have dual purpose stock, and from time to time have recourse to pure-bred stock."

U. M. Welch, of Ionia, considered the value of the silo for lambs and steers. He showed some astonishing results gained by silage feeding. In his estimation two pounds of silage is the equivalent of three pounds of dry feed. He would put mature corn in the silo, especially for fattening purposes.

Hon. L. W. Watkins of Manchester gave some suggestions for the simplest method of handling the corn crop. He advocated the shocking of corn for feeding purposes. In the growing of the crop, the ground should be cultivated very thoroughly before planting. He believed the rotation of crops should be respectively, corn, wheat, clover.

Mr. Watkins based the value of his methods on the saving in labor and the precarious supply of skilled labor when needed.

Much interesting and profitable discussion was provoked as to the relative merits of ensilage and shocked corn for feeding.

During this session, Mr. Gingrich sang two selections, "Chant d'Amour" and "O Promise Me."

FRUIT.

C. J. Monroe, of the State Board, was in the chair Thursday evening and after a few remarks introduced Prof. Taft, who talked on the subject "Rejuvenating the Apple Orchards." "Many of our old orchards," said Prof. Taft, "because of the apple canker and insects fell off in their production 46 per cent. in the decade from 1880 to 1890. In 1880, Hillsdale county produced 265,000 bushels of apples for export; in 1890, 86,000 bushels. The question then is, Can these old orchards be renovated profitably?" Prof. Taft expressed the belief that this would be profitable in cases where the trees are sound and where the orchards have good drainage and where the trees have a good soil, either a heavy sandy loam or light clay loam.

Pruning, cultivation, manuring, and spraying, are the methods calculated to renovate old orchards.

Hon. G. C. Creelman, Superintendent of

Institutes for Ontario, spoke next. Mr. Creelman was a graduate student at M. A. C., '92-'93, and remembered us very gracefully in his opening remarks. His subject was "Canada—What she has Done for the Farmer by Organization."

Said Mr. Creelman, "Canada is strong in her farmer organizations. The live stock, dairy, and various other associations have helped to put the farmer on an independent basis." The speaker illustrated this in the following way: "Ontario has for its area a larger per cent of pure bred stock than any other portion of North America. When hard times came several years ago, farmers to save themselves financially desired to ship their stock to the western provinces. This could not be done profitably because of the excessive freight rates. The live stock association was formed which, because of its strength, obtained through the Ottawa parliament the desired end. As a result of all the various organizations, bulletins are sent free into every village and community in the province."

Geo. E. Hilton next considered the canning factory. He gave it as his opinion that Michigan should be the leader in the canning industry as well as in the beet sugar industry, one reason for this being that the tendency is toward smaller farms. Geo. E. Rowe followed this talk, discussing the Raising of Fruits and Vegetables for the Canning Factory. "The very best of fruits and vegetables can be raised in Michigan," he said. "A proof of this is found in the fact that large canning companies outside the state draw up large contracts with farmers for the raising of fruits and vegetables. Next year," he continued, "should see one hundred new factories in operation in Michigan. The products to be raised for the factory depend on soil, condition of roads and nearness to factory."

The M. A. C. orchestra furnished excellent music for this session.

FRIDAY MORNING.

The classes in cooking and sewing at the Women's building, the exercises in spraying, and in judging horses and swine, at the Horticultural laboratory and the feeding yards respectively interested a large number of delegates during the first part of Friday forenoon.

BUTTER-MAKING.

At 10:30 a. m. the session in the armory was called to order with J. H. Reed, in place of David Woodward, in the chair.

Prof. C. D. Smith opened the discussion explaining that the purpose of the meeting was to discuss the production of milk and the making of butter at home. He stated that in 1802 the cow was kept for summer milking; then the best feed for the cow was the pasture, as it is now in 1902. "We have learned much about cow feeding," he continued, "but are still in the dark concerning many feeds because of the many contrary results obtained from the same experiments. Silage is perhaps the best feed. Clover hay because of protein is also valuable but is more difficult to produce than silage." Prof. Smith then took occasion to recommend Henry's Feed and Feeding. "On sandy soil," he continued, "sand luzerne can be commended as the crop to be grown for the cow. The seed for planting is obtained from Wernich & Co., Milwaukee, Wis." The discussion at this point became general. Alsike under certain conditions was considered by general vote to be good—principally for hay. Cotton seed meal was advanced by Prof. Smith as a valuable feed because of its power to produce hard butter.

W. A. Ellis was the next speaker. His subject was, "Handling cream and making butter." "The question of butter making has been much discussed," he said, "but the science of

butter making is little understood outside the creamery. Flavor is the most important quality in good butter. To produce good butter the cream must be well ripened. If left to the natural process of ripening, the cream will not produce a uniform flavor in butter. A "starter" should be used, the best starter being the commercial starter. Cream should be kept at a low temperature, while ripening, 60 degrees being the right temperature. Shortly before churning, the cream should be cooled to 56 degrees. A good quality of salt and a moderate amount of working," said the speaker, "produce the grain of butter. Immediately after churning, butter should be packed."

This talk produced much interesting discussion which occupied all the time till the close of the session.

State Board Meeting.

The regular meeting of the State Board was called to order Wednesday afternoon, February 26.

All members present except the governor.

On motion of Mr. Wells the board went into executive session to open bids for the construction of a bacteriological laboratory and a bacteriological stable.

The following bids, including both buildings in each case were then opened:

C. Snaffer & Son, Saline, \$23,585.16.

Chas. Hoertz & Son, Grand Rapids, \$24,323.30.

Geo. Rickman & Son, Kalamazoo, \$24,600.00.

Vandervoort & Co., Kalamazoo, \$25,295.55.

Chittenden & Skinner, Lansing, \$26,851.07.

The employment of an instructor in mathematics in place of Mr. Brasefield was referred to Mr. Watkins, President Snyder and Professor Vedder, with power.

The matter of taking steps toward bringing to justice the party who cut down a fine, large, oak tree on the College athletic grounds was left with the president and secretary of the College, with power.

The transfer of lot 9, College Delta, to Mr. Andrew Krentel was approved by the Board.

Secretary Bird reported that the lists of all remaining College lands except the 2,920 acres reserved for a forestry preserve had been filed with the Commissioner of the State Land Office, and pursuant to instructions from the Board, that the Commissioner of the State Land Office had been authorized to place said lands on sale as soon as legal advertisement could be made.

THURSDAY SESSION.

President Marston presented to the Board the report of State Accountant Humphrey on his annual examination of the office of Secretary Bird on December 14, 1901, with the following letter of transmittal:

LANSING, MICH.,

December, 16, 1901.

HON. T. F. MARSTON,

President State Board of Agriculture,

Bay City, Mich.

Dear Sir: The report of the examination of the accounts of A. C. Bird, Secretary of the State Board of Agriculture as required by Act 123, Laws of 1895, is herewith submitted. This examination took up

the accounts as they were represented by the account current for month ending November 30, 1901. Page 1 is a statement of the general situation. Pages 2 to 9 inclusive are auxiliary statements summarized on page 1. When I dropped into the Secretary's office last Saturday to make this examination, I was informed that the Secretary was out of the city. It is a pleasure, however, to inform you that your matters are conducted by a method that enables me to drop in at any time whether the Secretary is there or not and check up his cash account with the institution account. You will notice by page 1 that the accounts agree to a cent. This is certainly very satisfactory to this department. There is a very awkward situation however, in connection with this work but this is the fault of the law. We had hoped your Board would obtain an amendment to this law at the last session of the legislature. I think a bill was introduced for this purpose but did not pass. The peculiarity to which I refer is in having a treasurer who is in fact so far as your transactions are concerned, practically nothing but a banker. Most of the laws require that the money shall be paid by the State to your treasurer, but for years the State has paid out money in this way and never received an accounting from your treasurer. The matter was brought to the attention of ex-secretary Butterfield and he arranged with the Auditor General to have the payments made by the State upon a requisition in favor of the Secretary. It does seem as though something ought to be done to make the law harmonize with what appears to be a necessary practice in the conduct of the financial work at the College.

Very respectfully,
HENRY HUMPHREY,
General Accountant.

On motion the report was received, placed on file and ordered to be spread on the records.

On recommendation of Mr. Watkins from the committee on experiment station, Mr. T. A. Farrand, of Eaton Rapids, Mich., was elected to the position of superintendent of the South Haven sub-station at a salary of \$50 per month and house, beginning March 1, 1902.

Prof. Pettit was authorized to continue his experiments looking toward the abatement of the mosquito nuisance, provided no oil or other ingredients shall be used in the campus ponds which may be detrimental to plant life, without first conferring with and obtaining the consent of the superintendent of grounds.

The refitting of the quarters occupied by engineer Newell was authorized.

The installation of a cold storage plant in the Women's Building at a cost of \$192.00, as per plans and specifications furnished by the Mc. Cray Refrigerator and Cold Storage company, of Kendallville, Ind., was ordered.

On motion of Mr. Monroe the bid of C. Shaffer & Son, of Saline, for the construction of the bacteriological laboratory, being the lowest of all received was accepted.

On motion of Mr. Marsh, the bid of C. Shaffer & Son, for the construction of the bacteriological stable, being the lowest of all received, was accepted.

On motion of Pres. Snyder the secretary was authorized to return

certified checks to unsuccessful bidders immediately after contract should be signed by the above mentioned firm.

On motion of Mr. Monroe, Secretary Bird and Architect Bowd were authorized to enter into a contract in behalf of the board with C. Shaffer & Son, for the construction of the two buildings named, requiring from said contractors sufficient bond to guarantee the fulfillment of the contract.

Repairs to the limit of \$60 were authorized in the horticultural laboratory, same to be made under the supervision of Professor Taft.

President Snyder and Professor Weil were authorized to employ such experts as in their judgment should prove advisable to consult with Professor Weil in the completion of the plans for the general heating, lighting and water system for the College.

Secretary Bird presented the following resignation requesting immediate action on same.

Inasmuch as the firm of Clippert, Spaulding & Company, of which I am secretary and treasurer, desires to enter into competition for the furnishing of brick in large quantities to the College the coming season, from which competition said firm would be precluded by statute were I to continue in my present position, and inasmuch as my duties in connection with the West Michigan Nursery Company, Benton Harbor, are continually making new and increased demands upon my time, I herewith respectfully tender my resignation as secretary of the State Board of Agriculture, Agricultural College and Experiment Station, same to take effect May 31, 1902.

A. C. BIRD, Secretary.
Agricultural College, Mich.,
February 27, 1902.

On motion resignation was accepted.

Adjourned to meet at the College board rooms, Wednesday, March 26, 1902, at 2:00 p. m.

A Geological Trip.

[Read before the Hesperian Society].

Most geological trips for the government are quite extensive and are usually made by those having considerable knowledge of the subject, who return with very important results. During the summer it was my opportunity to do some field work for the geological survey which differed from the ordinary, however; first, in not being very extensive, and secondly, in the unfortunate fact that I had never been inoculated with any particular knowledge of the subject. For these reasons and also because much of the work is yet to be completed, no great discovery or particular addition to present scientific knowledge is promised.

In the past, geologists have paid a great deal of attention to the question of wells and well waters, especially where deep wells are located. It has always been a serious problem to readily and definitely determine the condition of the sub-strata and the various mineral deposits of the earth. Of course this can be done, but usually not without considerable preparation and expense. Now it has not only been thought, but to a certain degree has been proved, that the characteristics of the earth and its deposits can be partly ascertained by the analysis of its well waters. And it is believed that such examination can be made to reveal much more of what is below the surface than it now does. But besides for purely geological purposes, the examination of wells from a hygienic and sanitary standpoint is also very important.

So far, the analysis of such waters has been restricted almost entirely to the laboratory, although it is commonly known that for many reasons such results are not as

satisfactory as those that might be obtained in the field. For instance, the presence of marl, and other valuable carbonates is partially shown by the amount of carbon dioxide in fresh water, and for other reasons the determination of CO₂ is very important. This gas is lost so rapidly, however, that when tested in the laboratory the results can never be relied upon, and even in the field a portion of it is almost always lost. Besides the loss of certain elements, the transportation of water necessary to laboratory work always affords many chances of error, and so it is best to analyze the water right in the field. In order to see how practical field analysis would be, and as an addition to some work previously done in the eastern counties, I was given what I thought a pretty good opportunity to experiment. And my anticipations were quite fulfilled—my experiences being more interesting perhaps in a general, than in a geological way.

It did not take long to complete the work about Pinconning so about half a day was spent at Standish, a busy, lumbering town, yet rather a pretty place, which seems to have been set down in an undeveloped part of the state. Here I found the wells to be much freer from chlorine (which seemed to be the chief peculiarity of all) than those further south, with the exception of one, a large flowing well about 1,200 feet deep, which was very strong in chlorine.

From Standish I returned on my wheel to Linwood and from there drove over many of the routes and collected samples of those waters which from the field analysis seemed sufficiently important and characteristic of a certain territory to warrant a more extensive quantitative analysis in the laboratory. These samples were collected in carefully sealed, two-quart, mineral water bottles, and shipped in cases to the chemical department here, and it is upon these that I am yet to work. In order to obtain a check upon my results several previously tested wells were analyzed in Midland, and while there I found several old friends, among whom was Olmstead who was engaged in the mercantile business.

Perhaps the most interesting phase of the work in a scientific way were the visits to the coal mines. When coal has been located the first thing usually done is to carefully determine and map the depth, thickness, and extent of the veins; and this is done in some cases by making numerous drillings and surveys upon the surface. When this has been accomplished and the land leased, the shaft is sunk, an operation depending upon the relative location of the lowest and most central points of the mine. The location of the shaft being settled, miners' cottages are built, stores are gradually opened and with the shops, offices, power house, etc., a little settlement is soon started. In the summer the mines are not worked every day and those which I visited were only undergoing some repairs.

Very close to the structure over the coal shaft, which reminds one of a small but high grain elevator, the power house is located, and connecting these two may be seen large braces, several pipe and cable lines, and numerous signal wires. Near these buildings are also a number of railway tracks with loaded coal cars, and perhaps a small elevated track on which coal may be taken from the shaft to the power house. As one steps up to the shaft and opens the gate or heavy door to look down, he finds that there are two cages both arranged to work simultaneously and in opposite directions, and that these are usually only very roughly made elevators having a track upon their platforms which is so arranged that when a cage leaves the bottom of the shaft with a car of coal, the center of its platform bearing the car truck drops several inches, thus preventing the car from moving laterally. When the cage comes up it ascends to quite a height above the surface, where the coal is mechanically dumped into chutes which in turn take it to the cars or wherever desired.

At the first mine which I visited the "Super" went down with me. We went over to the power house, exchanged our hats for miners' caps with lamps, and the "Super" said to the engineer: "Jim, let's have the east cage, please." The wind was

so strong that we were unable to light our lamps before going "below" and so stepped over to the shaft and in upon the cage—or rather platform, it being a loose rickety affair having a piece of thin sheet iron over the top. The "Super" pulled a lever sounding a gong to the engineer who, after returning our signal, was again notified that we were all ready, and then he rapidly lowered us into the mine, the cage creaking and wabbling down the dark hole, rattling little stray chunks of coal against the tin over our heads, and at last, after long and trying suspense and with much jerking, stopping in a pool of water at the bottom of the shaft. Everything was black, awfully black, the hissing of steam and the pounding of pumps echoed strangely from several directions. My feet were wet; the air was cool and refreshing; but I was a little nervous and did not move until the "Super" said, "Stoop low," and led me three or four feet into the darkness. Our lamps were then lit, but forgetting to stoop, mine was quickly extinguished against a solid but uneven low slate ceiling from which hung glistening drops of water. Underneath it was wet; I stood between a couple of small rails, and looking ahead beheld a narrow, black and ragged hole which seemed to end not ten feet beyond. I was in a mine and instantly thought of the two hundred feet of earth and rock over me. It did not fall, however, and I took courage.

These thoughts of danger were only momentary and as we started through the mine the "Super" pointed out many interesting things. The methods of mining, of course, vary a great deal, according to the condition of the coal, rock, earth, etc. In this mine the bed was surmounted by a layer of slate from 70 to 90 feet thick which formed so strong a ceiling that very few wooden pillars were necessary. Instead of these the "entries," as the tunnels are called, were only four to six feet wide and were so left that at frequent intervals arches and pillars of coal in the wall served as supports. These "entries" usually extend in two or more directions from the shaft and follow the bed of coal, sometimes going down sharp inclines or around a curve, and occasionally up a steep grade. They often intersect in what are called "rooms," and as the mining continues branches are developed. Only short low cars are used, these being drawn to the shaft by mules which in the small mines are taken up in a box car at night. In order to avoid possible collisions in the dark, especially in large mines, the entries are usually so arranged that for the most part cars move only in one direction. Sometimes this is accomplished by having the tunneling in the form of a figure eight, there being at the shaft a short curved passage which enables the mules to pass from one side of the shaft to the other, in exchanging a loaded for an empty car, without crossing the cage.

The objects of having the shaft at the lowest point in the mine are, to allow the water to be pumped out from there, thus avoiding the necessity of placing steam lines in distant parts, and to facilitate the transportation of coal to the shaft, which if much grade is involved, becomes an important matter.

If the lowest part of the mine is in some distant entry, pumps must be put there to force the accumulating water to the surface or, in most cases, only to the shaft, from which other pumps force it out. In either case, elaborate piping is necessary and if the entry be a mile or two long, compressed air is usually substituted for steam. These pipes lie alongside the tracks and are frequently tapped to furnish power for the drills, which, in modern mining, take the place of the old picks, the coal being blasted out by powder or dynamite.

There are often large streams of water emptying into a mine and one of the interesting ways of controlling these is to cement a short pipe with a valve in close connection with the source, allowing the water to escape through the valve until the cement solidifies, and then to turn off the water. These pipes are very often seen in mines and in case of fire, if the pumps are stopped, will flood the mine in a short time. In almost every mine I visited there were salty waters, but in one case I found fresh water.

F. W. O.

Grand Rapids, M. A. C. Association.

The members of the Grand Rapids M. A. C. Association enjoyed a social gathering in the parlors of the Park Congregational Church, Friday evening, Feb. 21. The same cordial spirit prevailed which was so noticeable at the reunion and supper held in Dec. We greeted several friends who met with us for the first time, but who will certainly come when next invited. The rooms were nicely decorated with flags in honor of the approach of our National holiday. To the committee having charge of the evening's entertainment great credit is due for the pleasure which all enjoyed.

After the hearty greetings and an enjoyable game, which provoked much merriment, the company listened to some items of interest to M. A. C. friends.

Mr. Garfield spoke of President Clute's death and paid a tribute to his memory. He presented resolutions prepared by H. Arnold White which were unanimously adopted by the association. Mr. Nellist spoke of his recent visit to the College and of the class who would soon visit Grand Rapids greenhouses to learn how to grow lettuce.

Mrs. Coulter read the account of Dr. Kedzie's 79th birthday as given in THE RECORD, and the president of our association, Dr. Griswold, the oldest M. A. C. man in the city, gave a beautiful tribute to Dr. Kedzie and spoke of the work that he had been able to accomplish at the College.

Among other things Dr. Griswold said "Dr. Kedzie is the first physician I can remember and he is associated with some of the pleasantest recollections of my life. We lived in Vermontville and to this settlement of New Englanders, Dr. Kedzie came from Oberlin, accompanied by his wife,—a brilliant woman, his equal in every respect, yet so quiet, few knew her intimately.

Dr. Kedzie at once became the wit and life of the whole community. He visited the schools, told funny stories, which always had an underlying truth, and the pupils were ever ready to welcome this visitor.

It was Dr. Kedzie who started the literary society and it was he who brought the first grafted fruit into that community. I well remember going out to see that first load of trees and I can even now remember the labels, "Rhode Island Greening," "Northern Spy," "Golden Russets." On our farm at Vermontville today one can see some of the same trees that Dr. Kedzie brought to that vicinity and I remember helping my father plant them years ago.

Dr. Griswold then told some stories that well illustrated the wit for which Dr. Kedzie is so noted and afterwards paid a glowing tribute to the work done by this grand man during the civil war, where he worked so hard that he was compelled on account of ill health to resign his commission before the war was ended.

The College needed a professor of chemistry. It was twelve years before that Dr. Kedzie had graduated at Oberlin, and he had only a little chemistry in his medical course at the University since that time, but he took up the work at M. A. C. where he found things in a most deplorable condition, and built

up from almost nothing the fine course for which the College is today so famous.

Dr. Kedzie worked early and late. Wrote a lecture every night, and after he had gone home I used to sleep in that little room, off one corner of the recitation room in College Hall, which contained all the chemical equipments owned by the College in those early days at M. A. C."

The Washington, D. C., M. A. C. Alumni Association will hold its annual meeting in the near future.

"The hospital patient," Dr. Marshall says, "is fully recovered and the hospital thoroughly disinfected. The general health of College is better than for some time."

The Themian Society entertained the ladies of the faculty at an At Home in their society rooms on March 1, 1902. A short program was given and light refreshments served.

H. G. Driskel and G. D. Francisco were in Jackson last week arranging for their thesis which consists of a test for the efficiencies of the Ingersoll-Sergeant type of air compressor in the prison works of the Withington Cooley Mfg. Co., of that place.

We regret to announce that Mr. C. N. Janes, with '03, is suffering with an hallucination that he has heart disease and is threatened with immediate death. He was taken on Sunday to his home in Illinois. Mr. Janes was an unusually bright student and the case is a peculiarly sad one.

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Old Students.

Cards are out announcing the marriage of G. W. Gutekunst, '01, to Miss Lavina B. Murray, Wednesday, March 5th. Mr. Gutekunst is foreman of the Towar dairy farm near Ann Arbor.

A recent letter to Prof. Weil from H. A. Hagadorn, '98m, who is with the General Electric Company, of Schenectady, N. Y., gives an interesting account of testing work for that company. Mr. Hagadorn states that Geo. B. Fuller, '00m, is working for the same company.

The Chicago *Drovers' Journal* gives an account of a meeting of the reorganized Board of Directors of the Illinois Farmers' Institutes. The first district is represented by C. P. Reynolds, '99-'01. Dean Eugene Davenport, '78, addressed the meeting on difficulties in the way of sending out speakers from the College and experiment station of the University. The desire was expressed by members of the board to have the College men go out even though the faculty at the University must be enlarged to do so.

There has come to the College within the past week the prospectus of the first session of the Graduate School of Agriculture, to be held July 7th to August 1st, 1902, at Columbus, Ohio. This session is held under the auspices of the Ohio State University, with the co-operation of the U. S. Department of Agriculture and the Association of American Agricultural Colleges and Experiment Stations. In looking over the faculty, four of the twenty-nine instructors are found to be M. A. C. men, namely, Lyman J. Briggs, Ph. D., '93, soil physicist, U. S. Department of Agriculture; L. H. Bailey, M. S., '82, of Cornell University; Eugene Davenport, M. Agr., '78, University of Illinois, and Prof. C. D. Smith, of the College.

M. A. C. 58, Hillsdale 20.

M. A. C. beat Hillsdale Saturday at basket-ball before a good-sized audience. Blanchard and Balbach were absent from the regular team, but Morgan and Tuttle, who were substitutes, did excellent work.

The game was interesting from a spectator's point of view, the number of fouls called indicating the intensity of the play.

The line-up was as follows:

M. A. C.		Hillsdale.
Tuttle	Backs	Boone
Morgan		Wiley
Haftencamp	Forwards	Baker
Cooper		Higbee
Tower	Center	Ward
Substitute for Hillsdale, Wood; for M. A. C., Kingsley.		
Baskets thrown, Haftencamp, 10; Cooper, 7; Tuttle, 1; Tower, 1; Ward, 3; Wiley, 2; Boone, 1;		
Goals from fouls, Ward, 2; Cooper, 1.		

An interesting game of basket-ball was played by the junior and freshmen teams in the armory Saturday afternoon preceding the M. A. C.-Hillsdale game, the freshmen winning by the score 18 to 13. The following was the line up:

FRESHMAN.	POSITION.	JUNIORS.
Davenport	Forwards.	Kingsley (Capt.)
Shafer		Yates
Bald	Centre	Graves
Johnson (Capt.)	Backs	Mason
Elliott		Wheeler
Baskets: Shafer, 3; Yates, 2; Kingsley, 1; Bald, 1; Davenport, 1; Johnson, 1; Graves, 1.		
Baskets from fouls: Kingsley, 1.		

Recommendations.

As often as once a week on the average throughout the year, I am asked to give in writing an opinion of some former student setting forth his qualifications for some position. Here are some of the favorite expressions that are used more or less in the recommendations prepared by the writer. Some of them count on the right side, others have a negative value:

He was one of the best men in his class. He is a smart young man, easy to get along with and is well worthy a place in your faculty, if you can secure him you will surely make no mistake. He is not afraid of hard work, ready to work out of season and over-time, not over-cautious for fear he may do a little more than he thinks he is paid for. He is always busy, economizing time to a remarkable degree. He is persevering; very energetic; has vim, push. He is honest; never tricky. He knows how to set himself to work without having some one to tell him or follow him up. He possesses unusual ability. He has lots of *Gumption*, mechanical tact; he knows how to perform many jobs well,—a very valuable quality. He can tie up a package, pack a box, mail live plants, head up a barrel and address it neatly, all of which are accomplishments of a very high value. He is neat, tidy, *orderly*—puts things away without any hints from any one.

He doesn't drop and leave things just where last used. His habits are good, excepting he uses tobacco. He is in good health with great physical endurance. He isn't flighty, now working like a beaver, and then tired out and begging for a few days off. He doesn't ask on every Friday night to be absent till Monday noon (Most likely to see his girl?) He isn't afraid to do a share of work that soils his hands, or a dead work that doesn't seem to count on his advancement. He is cheerful, never morose, genial, not garrulous.

W. J. B.

Lewis G. Michael, with '01, goes soon from Horr to Aldridge, Mon., "where," as he says, "I am to go underground as assistant mine foreman for the Montana Coal & Coke Co."

Some of the M. A. C. graduates present at the meetings last week are as follows: Gertrude Lowe, with '01; Geo. A. Gould, '99, and wife, Munising, Mich.; E. W. Ranney, '99, Greenville, Mich.; F. L. Woodworth, '98, Caseville, Mich.; Fred Williams, Petoskey, Mich.; Dan. F. Pagelsen, with '96, candidate on the republican ticket for county attorney of Ottawa county; W. L. Cumings, '93, Menominee, Mich.; Kenyon L. Butterfield, '91, of Ann Arbor, Mich.; A. B. Cook, '91, president of Michigan Farmers' Clubs; V. S. Hillyer, '91, mining engineer, Iron Mountain, Mich.; John Hobart, '86, New Baltimore, Mich.; Colon C. Lillie, '84, Coopersville, Mich.; J. W. Beaumont, '82, who is one of the attorneys for the defense of Frank Andrews of Detroit City Savings Bank fame; Walter I. Lillie, '81, who has recently been appointed assistant U. S. district attorney, Grand Haven; William Caldwell, '76, Commerce, Mich.; Jay Sessions, '74, of Maple Rapids; Geo. A. Farr, '71, who has just been reappointed U. S. customs collector, Grand Haven.

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