

The M. A. C. Record.

VOLUME I.

LANSING, MICHIGAN, TUESDAY, MARCH 3, 1896.

NUMBER 8.

THE "ROUND UP" INSTITUTE.

(Continued from last week.)

Second Day—Live Stock and Dairy.

The second day of the institute was devoted to the stock and dairy interests. H. W. Mumford of the College spoke upon "Economical Methods of Sheep Feeding," advocating shelter, quiet, and regularity of feeding. He had found corn and clover hay to be as a rule the most economical ration and urged the importance of using roots or silage.

Hon. W. E. Boyden, Delhi Mills, of the State Board of Agriculture, gave a talk upon "Will Feeding for Beef Pay in Michigan?" taking the ground that well bred animals if properly handled could be placed upon the market at 24 to 26 months at prices that would be remunerative, especially as they would consume the coarse products of the farm and aid in keeping up the fertility of the soil.

"Practical Methods of Stock Breeding" was the theme of Hon. Wm. Ball of Hamburg. He believes that while special breeds are all right for the specialist, the ordinary farmer will do better to breed and use a general purpose horse, sheep and dairy cow. The above papers were discussed at length by H. H. Hinds, of Stanton, Aaron Clark of Middleville, Wm. Lessiter and others.

"The Dairy Herd" was discussed by J. H. Brown of Climax, associate editor of the Michigan Farmer. He advised the farmers to weed out unprofitable animals, testing the milk with a Babcock tester and keeping a record of the milk produced by each cow. He believes in cow comfort, and would furnish warm but well ventilated stables, and take off the chill from the water.

Prof. C. D. Smith spoke upon "The Feeding and Care of the Dairy Herd." He recommended the selection of animals from dairy breeds but regarded the trueness to type of more importance than pedigree. If one is going into dairying he recommended them to go in for all they are worth.

Mr. Brown next explained the value and method of using the Babcock tester and was followed by Mr. True who told "How to Make Good Butter." He spoke of the necessity of cleanliness and of the importance of a reliable thermometer. He prefers a churn with no interior fixtures and recommends the use of a separator as more economical than either the shallow pan, or deep setting.

In the evening Prof. Smith spoke upon "The Experiment Station," referring to the value of the bulletins that have been issued and the work that is being done in the various departments.

Prof. Woodworth spoke briefly upon "The Boiling Point," and Dr. Beal read an elaborate paper upon "Forest Fires" and the importance of a Forestry Commission to whom the whole matter of forest preservation can be referred.

Third Day—General Farming.

Hon. A. C. Glidden of Paw Paw, gave his theory upon the "Movement of Water in the Soil," which is different from that usually held. R. M. Kellogg of Ionia, attempted to disprove the theory, attributing the movement largely to capillarity.

Prof. Frank Kedzie discussed the question "Is the Use of Commercial Fertilizer Profitable in General Farming?" After stating the comparative value as shown by analysis of a ton of stable manure and a ton of commercial fertilizer, he presented figures drawn from the census which indicated that less fertilizer was used in a number of the counties in 1893 than was used in 1883.

Secretary I. H. Butterfield of the College, read a paper upon the "Present Standing of Ensilage as a Food for the Various Kinds of Stock," in which he considered the animals from which the best results with ensilage were secured, and the amounts that could be used to advantage.

I. N. Cowdry of Ithaca, gave his experience in "Potato Culture," advocating frequent and shallow cultivation as late as it can be given without injuring the tops.

"Forage Crops" as a substitute for clover were treated by A. A. Crozier, who recommended German Millet, and said a good word for Alfalfa and Crimson Clover, although the latter are by no means sure crops in this latitude.

Dr. R. C. Kedzie spoke upon "Wheats for Michigan," explaining the work of the College in testing new varieties and distributing those that seem most promising.

He regarded the Golden Chaff and Buda Pesth as of unusual merit.

In the evening Prof. Hedrick read a paper upon "Taxation" in which he claimed that real estate was bearing more than its proportion of the taxes, and ex-Gov Luce spoke upon "The Farmers' Contribution to Society" citing many instances where the leading men of the various professions and business callings have come from the farm.

The Women's Section, conducted by Mrs. Mary A. Mayo of Battle Creek, held three sessions that were well attended and excited much interest. In addition to the talks of Mrs. Mayo upon "Making Housework Easier," and "Mother and Daughter," Miss Margaret M. Sill of Detroit, gave a talk upon "Kitchen Economy," Mrs. Wm. T. Adams of Paris, spoke upon "Saving Steps," Mrs. J. B. Smith of Grand Rapids gave "A Mother's View," Mrs. Myrtle K. Cherryman looked at it from "The Daughter's Side," and Dr. Maria W. Norris followed with "A Physician's Counsel." Prof. F. S. Kedzie also talked upon "The Chemistry of the Kitchen," and Prof. Holdsworth upon "Art on the Farm." All of the papers were ably discussed and the meetings were regarded as of great value by all in attendance.

At the close of the evening session of the main institute resolutions were unanimously adopted thanking those who had taken part and approving the plan under which the institutes have been conducted during the past year.

M. A. C. AT THE ROUND UP.

We have secured the following list of graduates and students who were at the Round Up in Grand Rapids: Hon. C. J. Monroe, with '61, South Haven; Hon. C. W. Garfield, '70, Grand Rapids; Hon. F. W. Redfern, with '66, Maple Rapids; B. E. Benedict, with '71, Detroit; J. H. Brown, with '87, Climax; J. E. Hammond, '86, Hillsdale; Geo. C. Monroe, '91, South Haven; B. W. Peet, '92, Grand Rapids; W. F. Wight, '94, Allegan; G. E. Ewing, '92, Ross; W. M. Ball, '99, Grand Rapids; G. E. Van Alstyne, with '97, Grand Rapids; S. J. Redfern, '97, Maple Rapids; H. E. Van Norman, '97, M. A. C.; L. K. Thomas, with '98, Detroit; Dwight Cole, '93 m., Grand Rapids; C. E. Martindale, '98 m., Grand Rapids; F. W. Kramer, '97 m., Grand Rapids; W. A. Anson, with '95 m., Grand Rapids; John Nellist with '96 m., Grand Rapids; M. P. Thompson, with '96 m., Grand Rapids; Profs. F. S. Kedzie, '77, W. S. Holdsworth, '78, A. A. Crozier, '79, H. P. Gladdon, '85, P. B. Woodworth, '86, W. O. Hedrick, '91, P. M. Chamberlain, '88 m., and V. V. Newell, '94 m., all of the Agricultural College; and K. L. Butterfield, '91, Supt. of Institutes, Agricultural College.

THE COLLEGE WOOD LOTS.

A. A. CROZIER.

Forty years ago the 676 acres comprising the College farm was covered with forest. Since then clearing has been done each year, gradually increasing the tillable area of the farm. This process is now at an end, and the remaining woodland, comprising 150 acres, is reserved as a permanent forest, "to illustrate as far as possible the most advanced methods of properly handling woodlands for continuous and lasting profit."

The farm therefore now consists of over 500 acres of tillable land and one hundred and fifty acres of woodland, all "improved" and receiving care according to the purpose for which it is devoted. The two principal enemies of forest property are live stock and fire. Where stock is confined to a limited section of woodland all underbrush is soon destroyed and the woods become open and park like, the surface more or less covered with grass, attractive places for picnic parties, etc., but of little further use as a forest. The duration of such a forest is necessarily limited to the life of the large timber, and even this often prematurely dies from the unwonted exposure.

The College woodland has therefore been securely fenced against stock, and all the young growth preserved to take the place of the larger trees which are from time to time removed for lumber and fuel. This woodland lies mainly in two parcels, one called the south wood lot, comprising the land known as No. 17, and the other the north wood lot, lying east of field No. 7, along the Red Cedar River. This division into two parcels serves as a measure of safety against fire, but direct means for further protection have also been taken. The south

wood lot which extends for some distance along the D. L. & N. railroad, has been protected from fires from the engines by a strip of cultivated land cleared for that purpose. The north wood lot has a similar "fire belt" cleared of all surface vegetation extending through its center. In this wood lot is also maintained a system of roads or drives which are intended as a further protection against the spread of fire. These roads, and other improvements made and contemplated, are making of this wood lot a forest park which is becoming a popular resort for students and others during the summer months. The varied vegetation of its diversified surface, composed of upland, bottom land, swamp and river bank, all in a state of nature, make of this park a botanizing ground probably unsurpassed at any other college in the country.

A botanical survey of the more prominent features of these wood lots has been made. For this purpose each parcel was laid off in wards of uniform size, securely marked at the corners with iron pipe. These wards have been numbered and platted, and the kind and relative amounts of the timber thereon recorded. Measurements of some of the trees have been taken to learn in the future their rate of growth. In one of the wards all of the large timber was cut off from several acres a few years ago and a thrifty second growth is now taking its place. The College woods are therefore no longer wild land but a source of profit and a means of study.

Experiment Station.

WIRE FENCE—TELEPHONE LINES.

PROF. PHILIP B. WOODWORTH.

An article in an exchange says the wood fence must go: 1st, for lack of wood, and 2d, because the wood fence is the cause of the "vexatious snow banks which blockade our highways every winter, thereby rendering them unsafe and impassable for weeks at a time." The fence recommended is the wire fence and the writer favors the remittance of highway labor taxes as an inducement to build wire fences along the highways.

There is a use to which the wire fence can be put which would be a great convenience. For distances not exceeding ten miles the wire fence as ordinarily put up will answer very well for a telephone line or lines. During the season just passed a company operating a line between two towns (Woodland and Lake Odessa), used for one section of their line the top wire of an ordinary wire fence.

Two men in Northern Michigan four miles apart expect to connect their houses by using a wire of the railroad fence. All the so called lightning arrester wires will be removed and light poles will be set to carry splices over gates and road crossings.

During the past season a college telephone line with seven instruments of various makes was in successful operation over the line of No. 14 fence wire. The wire was not insulated at all, but was strung through trees and over buildings wherever it could go most conveniently.

Almost any of the regular telephones now on the market will give very good service over such a line.

There is absolutely no danger to "man or beast" from a wire used as a telephone line. Horses are said to be the most susceptible of dumb animals, and it is possible that a horse in contact with a wire might receive a shock. The effect of the shock would add to rather than decrease his gait, and it might teach the horse not to use the fence as a resting place.

There are several evident reasons why the wire fence is not an ideal telephone line, but its use as a telephone line will not impair the value of the fence as a fence but may help to have the fence kept in repair.

The general introduction of the telephone in the farmer's home will make a new era in the farmer's life. It will most certainly in a large measure prevent his being classed with the tiller of the soil in the eastern hemisphere—"a social and political nonentity." The telephone service could be arranged to give at stated times the forecast of the weather, the markets, and a bulletin of the news of the day.

At evening time in his easy chair with the receiver at his ear, he will listen to a digest of public opinion and the very latest from the Flying Squadron, Cuba's Czar and the X rays. He will be the independent lord in touch with the dependents of the town.

Dept. Physics and Electrical Engineering.

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An editorial in the *Detroit Tribune* of Feb. 24, in discussing the report of the special faculty committee, a portion of which is found in this number of the RECORD, has this to say: "It is not hard to discover why the Michigan Agricultural College does not do better when the men who run it either do not understand its purposes or, while understanding them, ignore them." The editor of the *Tribune* claims to thoroughly understand the purpose of the College. In his view it should be simply a farm school, should teach nothing but farm work, and should have nothing to do with the mechanic arts. It lays especial emphasis on the assertion that teaching mechanical engineering is a perversion of the funds appropriated for the sustenance of the school. Let us see how this view compares with that of the legislature in organizing the College, with that of congress in appropriating lands for the maintenance of such an institution; with that of the legislature subsequently in accepting the grant of lands, and also in accepting a further grant from congress for the same purpose. The legislature of 1861 reorganized the College, placing it under the control of the State Board of Agriculture. In that act the legislature plainly indicated the design of the institution in these words: "In fulfillment of the injunction of the constitution to afford thorough instruction in agriculture and the natural sciences connected therewith, and to effect that object most completely, the institution shall combine physical with intellectual education, and shall be a high seminary of learning in which the graduates of the common school can commence, pursue and finish a course of study terminating in thorough theoretical and practical instruction in those sciences and arts which bear directly upon agriculture and kindred industrial pursuits." "The course of instruction shall embrace the English language and literature, mathematics, civil engineering, agricultural chemistry, animal and vegetable anatomy and physiology, the veterinary art, entomology, geology, and such other natural sciences as may be prescribed, technology, political, rural and household economy, horticulture, moral philosophy, history, bookkeeping, and especially the application of science and the practical arts to practical agriculture in the field."

In 1862 congress made the grant of lands to each state for the "maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches as are related to agriculture and the mechanic arts in such manner as the legislature of the states may respectively prescribe in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." The several states were directed to apply the interest on the funds received from sale of these lands to the maintenance of such a college. The legislature of Michigan accepted this grant in 1863 in accordance with all the conditions and provisions in said act, and reiterated in section 8 of said act of acceptance the conditions which had been prescribed by congress; namely, that the interest on the fund created from the sale of these lands should be "regularly applied under the direction of the State Board of Agriculture to the support and maintenance of the State Agricultural College where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and mechanic arts, in order to promote the liberal and practical education of industrial classes in the several pursuits and professions of life."

In 1863 the legislature passed an act establishing a military department at the College, section 1 of which reads as follows: "The people of the State of Michigan enact that, in addition to the course of instruction already provided by the law for the Agricultural College of this State, there shall be added military tactics and military engineering."

In 1890 congress passed the following, entitled "An act to apply a portion of the proceeds of the public lands to the more complete endowment and support of the colleges, for the benefit of agriculture and mechanic

arts." This act prescribed that the sum appropriated should be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of physical, natural and economic science with special reference to their application to the industries of life, and the facilities for such instruction.

The legislature of 1891 accepted this second act from congress in the following terms found in section 1 of said act: "An act to apply a portion of the proceeds of the public lands to the more complete endowment and support of the College for the benefit of agriculture and the mechanic arts established under the provisions of an act of congress approved July 2, 1862." "The assent is hereby given and the moneys thereby given are accepted under the conditions and terms in said act named."

In each of these acts of congress making appropriations, it is expressly stated that no portion of said moneys shall be applied directly or indirectly under any pretence whatever to the purchase, erection, preservation or repair of any building or buildings.

The legislature of 1885, in making appropriations for the Agricultural College, included "\$17,000 for workshop equipments and other expenses for a mechanical department." The legislature of 1887 made a further appropriation for the same purpose, of the sum of \$4,000. The legislature of 1889 also appropriated to the mechanical department \$3,200; and the legislature of 1891 appropriated \$1,500 for the erection of a building for a foundry in connection with the mechanical department. Since 1891 the interest received from the land grant fund, together with the second appropriation and the annual receipts of the College from various resources, have been sufficient to pay nearly all the current expenses of the College, so that the State has furnished but a very small sum for college support during the last five years except for buildings, and repairs of buildings.

On looking over these requirements of both the U. S. law and the State law in regard to the objects and purposes contemplated in the organization of the Michigan State Agricultural College it will be evident to every candid observer that the Board of Agriculture has endeavored to carry out the plans of both the general and State government.

OUR BORDER STATE.

LIEUT. E. A. LEWIS.

Our recent mild war scare has drawn attention to the rather unprotected condition of our border states. Almost beyond a doubt we would be compelled to meet as a result of war, the invasion of our country. To invade with any hope of success, an enemy would need control of a considerable territory to be used as a base of operations. Indeed it may be doubted if any attempt would be made by the enemy, unless he were in possession of several points from which separate columns might simultaneously be pushed out. From these bases the armies would be reinforced, supplied with food and munitions of war and upon them, the armies would retreat in case of disaster. Footholds for invasion are found in Canada, Mexico and the British islands near our coasts. Captured harbors would also be made to serve like purposes.

It seems hardly probable that any European nation, save England, would attempt the invasion of the United States. We hope to have no trouble with the British nation, but nevertheless trouble is a possibility, and it may be of benefit to us to consider the part Michigan would have to play in a contest between the two English speaking peoples.

From one side Ontario would be entered; the control of both sides of the Detroit and St. Clair rivers would give command of Lakes Superior, Huron and Michigan, and thus protect our lake cities from attacks by water.

The Canadian Pacific Railroad would be reached from the upper peninsula and the military line between the British depots on the east and west sides of the continent broken. Minor operations would reduce the Canadian lake cities. The control of the entrances to the lakes surrounding our state, would be of immense value to either nation. To us it would mean freedom of our state from land and water attacks. To the British it would give all our lake cities and open the way for an invading force.

From the British side, Michigan, by way of Detroit, would be the natural route to Chicago and our rich inland cities; to our main east and west railway lines, and to our rivers and richest farming districts. A dream of conquest of our land by a foreign power, would include a line from Detroit to the Ohio, thence down the Mississippi to the sea; thus cutting our country in two parts, to be separately dealt with.

War, if it comes at all, will come suddenly. The good sense of the peoples of both nations, if allowed to act,

will preserve peace; but either nation is liable in a moment of fevered excitement to precipitate hostilities. It seems almost a certainty that we must as a result of war with England, gain in time, at least military possession of Canada. But the first battles would be fought on American soil, and southern Michigan would furnish the fields for the struggle of two great armies.

We have no defensive works to protect our borders; British troops, regulars and Canadian militia, are stationed at our doors in numbers far exceeding ours. British gunboats, one hundred or more, could be rushed into the lakes; and a naval force sufficient to give absolute control of our inland seas is kept constantly on this side of the Atlantic. In view of the possibilities of war, England has made some preparation for it. Are we prepared for war with her? Could we soon enough raise, arm, organize, officer, supply and mass troops to successfully meet an invasion? Do we need any defenses along the Detroit or St. Clair rivers?

Military Department.

NEWS FROM GRADUATES AND STUDENTS.

Students in Mechanical Course designated by "m." and specials by "sp." after name.

D. A. Garfield, '89, is now cashier of the Albion, Mich., State bank.

N. C. Thomas, with '97, is manager of a creamery at Dorr, Allegan county.

A girl baby, 8 $\frac{3}{4}$ lbs, born Feb. 16, causes rejoicing in the home of Perry G. Towar, '85, at St. Louis, Mo.

Prof. Chas. L. Bemis, '74, of Ionia, is being mentioned favorably as a proper man to be placed on the State Board of Education.

L. J. Briggs, '93, is assisting Prof. Rowland at Johns Hopkins University in an investigation to determine the nature of the X rays.

Geo. C. Humphrey, '97, assists his father upon the farm at Lenawee Junction during the present year but will return to college in 1897.

L. A. Wilson, '94, in company with C. H. Gibbs, with '92, is occupying the winter promoting the interests of an investment association at Jackson.

Geo. F. Stow, '88, while paying a business visit to Ypsilanti, visited the farmers' institute at that place to renew acquaintanceship with the college teachers.

Royal Hardy, with '91, is doing yeoman service for his father on the farm at Osceola Centre, Livingston county. W. G. Smith, '93, occupies himself likewise near the same place.

F. H. Elliott, '94, was married Feb. 6, to Miss Bertha Aldrich at the residence of the bride's parents, Hickory Corners, Mich. Mr. and Mrs. Elliot reside on the farm near Hickory Corners.

Geo. Starr, '97, finds an outlet for agricultural enthusiasm in assisting his father manage the farm. He was a visitor at the Oakland county institute, and will return to the college next year.

C. A. Graves, '97, m., after recovering from a severe attack of typhoid fever during the past autumn, has occupied the position of teacher in sciences and history in the Raisin Valley Seminary.

At a meeting of the Farmers' Progress Club held near Clio, Feb. 12, Vice Pres. H. A. Daniells read Jas. Y. Clark's paper on "Prospects of the Young Farmer," printed in No. 4 of the RECORD.

Prof. A. T. Stevens, '93, writes from his college work at Greenboro, N. C.: "With landscape gardening, botany, floriculture, horticulture and agriculture on my hands, I do not have time to write long letters."

E. A. Murphy, '82, M. A. C., formerly county school commissioner, is meeting with flattering success in the legal profession. He has been associated with Locke Bros. at Ionia but a few months and the firm is already enjoying a lucrative practice.—*Portland Review*.

Theo. A. Stanley, '86, New Britain, Conn., has been in the dairy business steadily since graduation. "I have built a new barn, a boarding house, and purchased a large herd of Jerseys all since Sept. 1. Am making 75 to 100 lbs. of butter per week besides retailing over 400 quarts of milk daily."

A. Latcha Waters, '90, writes from Globe, Arizona: "After leaving old M. A. C. I took the mining school course graduating in 1893, soon after taking the position of superintendent of a lead and zinc mining company near Chattanooga, but financial conditions compelled a shut down. I then managed my father's fruit farm at Spring Lake, Mich. In Jan., '95, I went to New Mexico as assayer for a big silver and gold mining company. In three months I was night foreman in the

stamp mill and a month later assistant mine superintendent and mining engineer. In December I came to this place as supply clerk for the Old Dominion Copper Co.

J. D. Towar, '85, Kingston, R. I., College of Agriculture and Mechanic Arts, says: "There is a prospect that I may visit Michigan this summer but it is hard to decide whether to do this or to spend the vacation on the Atlantic coast with my wife and baby, catching fish and crabs, digging clams, bathing and being lazy."

Ed. Weeks, with '91, is prosecuting attorney of his native county, Macomb. Since leaving the M. A. C. he has attended the Wisconsin University and studied law in his father's office. He was elected to the position which he now holds at the last election. Mr. Weeks has high hopes of great prosperity in the future at the M. A. C.

We desire to make some corrections and additions to the biographical sketch of the late Dr. C. H. Eldridge, given in the RECORD Jan. 21. Dr. Eldridge practiced for over a year in Snohomish, not Hartford, but, owing to a severe internal injury received on horseback while on his way to visit a country patient, he gave up his practice in 1893 and moved to his ranch near Hartford, where he remained till the spring of 1895, then moved to San Francisco. He was married in March 1893, to Miss Margaret Illman of Hartford, who survives him, and to whom a son was born January 26, 1896.

"Since I left College my business has grown rapidly so that my magazine has now a much larger circulation than any other journal of its class, while my trade in seeds, bulbs and plants has greatly increased. Every year I get car loads of bulbs from Holland and Belgium, and seeds from Germany and France besides what I grow. I have but little leisure but I still find a moment now and then to recall the happy experiences of college life and the pleasant associations with professors and classmates during those four years of study." Geo. W. Parks, '86, Editor and Proprietor Parks' Floral Magazine, Libonia, Penn.

AT THE COLLEGE.

Miss Essie Singleton of Caseville, is the guest of Prof. and Mrs. Woodworth.

Prof. Wheeler and family returned from their visit in Ionia county last week.

Twenty-seven new students have enrolled this term; two of these are lady students.

Katharine is the name of a daughter born to Prof. and Mrs. Vedder, Feb. 25, 1896.

We were favored with calls from a large number of the visiting Foresters last week.

Dr. Edwards is performing the duties of president during the absence of Dr. Snyder.

Mrs. C. S. Brooks, who has been visiting in Saginaw returned to M. A. C. last Thursday.

L. C. Brooks, '92, m., returned to Stronach, Feb. 28. He will reopen his school in the "city hall."

The M. A. C. Grange will meet in the Columbian society rooms this evening at seven o'clock.

G. J. Hume, '87, B. Pd. Mich. State Normal, '96, is taking special work in zoology and geology at M. A. C.

Dr. Snyder took charge of the chapel exercises on Monday evening of the opening of the term, and left early the next morning for Pittsburg, Pa.

We are glad to learn that Mrs. Babcock, who has been very ill in Detroit, is now convalescing. It is hoped that she will be able to return to M. A. C. this week.

G. N. Eastman, W. J. McGee and C. H. Briggs, seniors, are working with Roentgen rays. The equipment of the Department of Physics offers an excellent opportunity.

Frank Yebina, '95, L. R. Love, '96, and L. D. Sees, '96, attended the state convention of the Y. M. C. A. at Kalamazoo, the latter part of last week, as delegates from the College organization.

In honor of Prof. Chamberlain's birthday the following guests were entertained at tea by Mrs. Chamberlain on Feb. 28: Dr. and Mrs. Edwards, Lieut. and Mrs. Lewis, Prof. and Mrs. Woodworth and Prof. Vedder.

Edson S. Palmiter, with '77, of Hart, spent Tuesday night at the College, calling on Drs. Kedzie and Beal, Prof. Taft and his former neighbor D. J. Crosby. Since leaving M. A. C. Mr. Palmiter has been identified with the newspaper business most of the time. He is now engaged in preparing a set of abstracts for Oceana County. He was delegate from Hart to the meeting of the Foresters in Lansing.

We notice among those enrolled this spring quite a number of students who had dropped out of the course for a few terms—some for several years. Among these are H. H. Rhodes, E. A. Calkins, F. M. Nichols, D. McElroy, G. C. Henderson, E. B. Wallace, H. N. Brown, and C. P. Wykes.

Dr. Beal goes to Grand Haven next Friday to address the Ottawa County Forestry Association. He will speak on "Forestry and Tree Culture," trees along the roadside and in villages, and Arbor Day for schools, in the afternoon; and on "Good Roads" in the evening. This is the pioneer forestry association in this state. Walter Phillips of Grand Haven is president.

Early last fall the Board of Control for the Michigan Home for Feeble Minded at Lapeer, purchased a herd of eleven Holstein-Friesian cattle in the state of New York. About the beginning of the new year it was noticed that some of the animals were not thrifty, one of them coughing a good deal, others occasionally. These symptoms lead to the application of the tuberculin test by the State Veterinarian, Dr. E. A. A. Grange of the Agricultural College. This test showed that nine of the animals were affected, all of which showed evidence of tuberculosis upon a post mortem examination. The post mortems were held in the presence of the State Veterinarian of New York, and of the Live Stock Sanitary Commission of Mich. The reason why the New York State Veterinarian was present was to show the people of New York that the animals were affected with the disease, and to enable him to form an opinion whether it was contracted here or imported with the cattle. It is worthy of note that he stated that the disease was not contracted in this state, which opinion was based on the history of the handling of the animals, and their surroundings since their arrival in this state.

THE PHONOGRAPH.

RAY S. BAKER, '89.

In the office of the Chicago Record the phonograph has become almost indispensable in carrying on the correspondence. The various heads of departments who have many letters to write have phonographs in the drawers of their desks. When the opened mail is placed on the desk in the morning the manager opens his drawer, takes out the phonograph tube and places it to his lips. Then he talks off the replies to the letters one by one. When he fills a cylinder the typewriter comes and takes it out and replaces a new one so that the letters may be answered without interruption. The day's mail being attended to the typewriter places the cylinders one by one in the phonograph on her desk, inserts the tubes in her ears and taps off the letters. She can make the machine talk as rapidly as she desires and while she is being thus entertained she is insensible to the world outside. By this arrangement the services of a stenographer are dispensed with and both letterwriter and typewriter are enabled to get through much more work in the course of a day. This use of the phonograph is being rapidly extended in Chicago.

SMOKE HOUSE ASHES.

GANGES, Mich., Feb. 17, 1896.

Prof. Kedzie, Agricultural College:

DEAR SIR—While at the "Round Up" at Grand Rapids last week, I spoke to Prof. Taft about some Smoke House Ashes that I got from Chicago. Thinking that perhaps there was a large amount of salt in them I asked his opinion about using them and he thought it would be a good idea to have them analyzed. And I understand that he spoke to you about the same, hence the sample of today. Yours truly, GEO. E. WEED.

The Ashes were analyzed and found to contain 5.97 per cent of potash, and 2.36 per cent of common salt. They are rich in potash, and valuable as a fertilizer for fruit trees. A ton of them contains less than a bushel of salt. This will enable a person to estimate the amount that may be safely used to an acre of orchard.

R. C. K.

WILL WHEAT TURN TO CHESS?

DR. W. J. BEAL,

The following notes are furnished by request and are substantially the same as repeatedly given at numerous farmers' institutes in the State, where the question often comes up for answer. No doubt the readers of the RECORD, some of them at least, may have heard of this question before. It does not die readily—I mean the question now under consideration. I never knew of any good botanist who believed that wheat would turn to chess, but many farmers "know" it will by experience, and who is more to be relied on in matters of close observation in plant growth than the practical

farmer? He has lived among these things all his life. In the matter of fish and lobsters, who is the better judge, the student who has studied the development and life habits of the animals in question, or the man who has caught or sold fish and lobsters all his life? In answer to the latter question, the writer once called at a fish market to buy a lobster for dissection. After learning that I was interested in such matters, he said, "How is it that the right claw of a lobster is always the largest?" I replied that it was not always the largest; sometimes they are nearly of equal size; sometimes the right one is the largest; sometimes the left one. "Why, yes, the right one is always the largest I know. I have sold fish and lobsters nearly all my life and I am now an old man." I explained about a lobster losing a claw now and then and a new one coming out to take its place; and the young claw is often smaller than the other. Turning to the stock of lobsters in his market, the proprietor expressed great surprise, when shown that sometimes the left claw was the larger and sometimes the right. We are never too old to learn.

A school teacher in the southwestern portion of the State, once sent me the evidence, as he claimed, that wheat and chess could grow out of the same stalk. Whether he prepared the specimen himself or someone else had deceived him, I never knew, but some one had clipped off slanting with a sharp knife or shears the top of a chess plant, and thrust the straw down the upper sheath of wheat nearly to the joint. It took me but a little time to unravel the mystery.

A farmer sent a small plant to an editor of an agricultural paper in Chicago. The plant was forwarded to me. It bore a small panicle of chess at the top and there were other evidences that it was a genuine plant of chess, but attached to the end of one of the roots was what appeared to be an old kernel of wheat. Here was "proof positive" in the mind of the farmer that a kernel of wheat had produced a stool of chess.

I placed the roots carefully in a saucer of water, and in the morning the old empty shell of wheat had floated away and left the root tip, showing that the connection was not very close. The farmer probably did not know or stop to think that corn, wheat, oats, chess,—all true grasses hold the kernel in close contact with the lower end of the true stem just below the surface of the ground or wherever the kernel happens to be.

In collecting wild plants I have often found snail shells attached to the tips of the roots where the latter had probably found a small amount of nourishment, but I never supposed that the snail produced a root which grew larger and larger as it went up to other roots and all there united to bear a small tree. Such would need to be the case if the plant behaved as the farmer supposed the chess plant behaved in coming from a kernel of wheat.

Where chickens had formerly been fed, I have often pulled up plants of chess, several roots of which had sent their tips into the old hulls of oats by accident or for nourishment, but never for a moment, did I suppose all of these oats sprouted simultaneously, each sending its sprout to a common center where all united to produce a chess plant.

Some persons say that, when, by freezing and thawing, the tap root of a young wheat plant is broken in two, then the wheat plant forthwith becomes one of chess. When I tell them that no cereal or other grass ever produces a tap root, that probably what they mean is the slender stem which below ground starts at the kernel, they say "the stem, then, breaks in two." They place more confidence often in what some one else had told them than they are willing to place in anything that I can say.

I have half a dozen times or more received spikes of wheat from which protruded a few kernels of chess. I have often found such specimens myself. In the minds of many persons, perhaps most persons, this is proof enough at first sight to convince them that chess and wheat may come from the same plant. Instead of telling the sender how it was, I returned the specimen, telling him to place it in water until softened; then by pulling the chaff of the wheat carefully back, he will see the chess kernels still attached to a small branch, which in some way caught in by a downward pull against the spike of wheat and then broke off. The free end of the broken stem of chess has always been easy to find in all specimens which I have seen. I have fixed specimens of this sort which would be more deceptive to the unwary than any ever sent me, or any that I ever found.

A man and wife, perhaps seven years ago, drove over one summer some ten miles from Clinton county to the College. He said, "I heard that you offered three hundred dollars for evidence that wheat would turn to chess, and I believe I have the documents here to prove it." I told him I had said something of the sort, excepting he had the reward rather high. I looked his specimens over, but did not try to bluff him in any

way, telling him to watch every move I made and see that I did not deceive him. They brought two large bunches pulled from the ground, some of the stems of each bunch bearing spikes of wheat at the top, others panicles of chess. I placed the roots of each bunch in turn under the cistern pump. After washing off much of the dirt, they consented to permit me to cut off with the shears a lot of protruding naked roots; then more washing and more shearing of roots, till finally the plants came apart, showing no organic connection—only a tangled mass of roots of two plants. They returned in good humor, apparently satisfied, not claiming any reward.

Two of my special students, resident graduates, now professors in an Agricultural college, unbeknown to me one autumn, filled two shallow boxes about twelve by twenty inches in size with earth from the garden. In one box they sowed wheat, in the other chess, and both were sunk nearly to the top in the soil of a low place in a field of wheat. About harvest time the next year, Latta and Troop brought the boxes with the contents into the botanical laboratory to show the results. The box in which chess had been sown bore several vigorous plants of chess; the other bore a few very small plants, two of which showed a trace of small spikes of wheat. As one of the students said, "These plants were bound to be wheat or nothing."

In moderate sized plants of chess I have never failed to find in five times out of six the old kernel of chess still adhering among the roots of the lower end of the stem in just the right place to have produced the stool of chess. I have never found a kernel of wheat in such position on the lower part of a plant of chess. How the kernel of chess got into the soil I leave for others to explain. The fact that it was still attached to the base of young plants of chess is to me one of the strongest evidences that the chess plant came from a kernel of chess.

The growing wheat appeared quite clean and would yield twenty five bushels of grain to the acre. The small plants of chess were doing what they could toward producing a crop of grain. Had the winter killed the wheat which is less hardy, the plants of chess doubtless might have developed at full height.

I will not continue this article longer by trying to explain more fully all the questions asked by the advocates of the rapid transformation of wheat to chess. I have often seen plants of chess not over four inches high in a wheat stubble, bearing three to ten kernels of mature grain.

Botanical Department.

REPORT OF THE INVESTIGATING COMMITTEE.

The following is a somewhat condensed copy of the report made to the Board of Agriculture at its recent meeting. The full report, with tables, charts, etc., is to be published in pamphlet form, and on application will be sent to those interested.

To the Honorable Board of Agriculture:

GENTLEMEN—Your committee of three members of the faculty of the Michigan Agricultural College, appointed Sept. 10, 1895, to "inquire into the causes which have contributed to the seeming lack of popularity of our college with the class of people in whose special interest it was organized by the State," and "to report its findings to this board together with its recommendations as to any change of policy or method by means of which the College may be enabled to get in closer touch with the farmers of the State and secure the attendance of their sons and daughters at our institution, and consummate the object sought by the State and general government in founding and endowing the institution," beg leave to make the following report:

The inquiry has been prosecuted under many difficulties; foremost of which were the lack of leisure on the part of the committee until the close of the term, and thereafter an abnormal condition of the public mind, rendering impossible any approach to more settled opinions and their bases. Notwithstanding, the committee believes that it has in some degree performed its task and has arrived at weighty and important conclusions. The investigation has been conducted along the following lines and the original data are accessible to you under the various references in the body of the report:

1. Letters to prominent persons.
2. Newspaper articles since the origination of the College.
3. Interviews with prominent men.
4. Opinions from recent students.
5. Reports from various bodies, notably the State Grange and a section of the Alumni.
6. Opinions of members of the faculty.
7. Statistics relating to this College.
8. Facts concerning other similar colleges.
9. Facts concerning different colleges.
10. Some study of conditions in other countries.

Statistics of attendance at the College show an apparent increase in total attendance since 1887. But an analysis of the figures shows that this increase is due to three causes that prohibit us from reckoning it as coming from the farm or as proceeding from an increased interest in thorough agricultural education. In order to make a comparison that shall be indicative of increase or decrease of interest in agricultural education it is necessary to make the comparison under similar conditions and to exclude increment arising from the introduction of new sources of attraction. Previous to 1886 there were only three classes of students at the college, namely, agricultural students, special students, and a few ladies resident at the college. At that time appears the first class of mechanical students. This class has grown from 36 in 1886 to 127 in 1894, and a slightly smaller number (117) in 1895. The attendance of ladies has materially grown though not steadily. In 1889-90 the summer school idea for teachers of science in the public schools was originated, and this has caused a growth in the special student class (not including regular graduate students or students merely irregular in classification) from 28 in 1887 to 55 in 1895. In 1894 the special winter dairy course was organized, and numbered in 1894, 17, and in 1895, 30. If we deduct from each year's total attendance the dairy students, the ladies, the mechanical students, and the special (teacher) students, we get the agricultural students of each year. The figures show increase from '75 to '81; decrease from that time to '85; a large and sudden increase from '85 to '88; then a falling off to '91; and a practically stationary condition from '91 to '95. The highest number of agricultural students was reached in 1888, namely, 232. As, however, no specials are given that year, there is probably some mistake in the figures and it is safer to take, as the highest, the figures of the previous year, 221. The lowest subsequent number is in 1894, 161; and from 1891 to 1895 the range of difference is only 15, with a final number of 167. From these data, we gather that, with temporary gain from '79 to '82 and from '86 to '90, the interest in thorough agricultural education at the college has practically remained stationary since 1876.

A table is herewith submitted showing the percentage of students from the farms from 1883 to 1894. This table shows large variations from year to year; but if we average the percentages for periods of three years, we get a falling off from 55.6% in the first period to 39.8% in the third, with a stationary percentage for the last six years. This decrease of percentage corresponds very closely with the rise in importance of the mechanical course; and as it is to be supposed that this attraction would draw largely from the cities, the decrease in ratio is probably due to increase of attendance from the cities, rather than decrease of attendance from the country. Moreover the actual decline of ratio between rural and urban population from 61% in 1884 to 55% in 1894 would offset any further relative decrease in ratio of attendance. So far then as absolute attendance from the farms is an indication of interest in the present work of the college, after a consideration of all the data, we may safely assume that it has remained stationary during the last twenty years. So far as this goes we may congratulate ourselves; but even with the stationary rural state population it would seem that if agricultural education, only ten or twelve years old in this state in 1875—for the war period is practically a blank—is a pressing need in farming, it should, with so large a mass to leaven, have multiplied the attendance at the college many times over. In comparison, too, with the average growth, our agricultural course makes a bad showing. Statistics of attendance for the same period at the U. of M., the Normal, Albion, Olivet and the M. A. C., show that the growth of the first four schools has been phenomenal, ranging from 80% to 190%.

One other comparative table is given to show the range of the facts we are handling. This table shows the actual attendance on the agricultural courses of a number of the best agricultural colleges in other states. They are those from which your committee could get reliable data. Many of these colleges give a variety of courses more or less general in nature, and summaries of attendance on these courses are the only statistics accessible. By study of this table and the accompanying correspondence it will be found that in only one college does the attendance of male students on a distinctly agricultural course exceed our own; and in most cases it is much below ours. The important conclusion from these facts is that no causes purely local in their range of effect will account for the facts existing elsewhere as well as here, and we may also comfort ourselves somewhat with the other apparent truth that nowhere have these antagonistic forces, whatever they may be, been more successfully met than in our school.

(Continued next week.)

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ADDRESS "THE SECRETARY,"

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