

The M. A. C. Record.

VOLUME I.

LANSING, MICHIGAN, TUESDAY, MARCH 24, 1896.

NUMBER 11.



DR. JONATHAN L. SNYDER,
SIXTH PRESIDENT OF THE MICHIGAN AGRICULTURAL COLLEGE.

A UNIQUE MUSHROOM HOUSE.

G. C. DAVIS.

As announced in last week's issue I was recently called to Grand Rapids to aid if I could in controlling some mushroom pests at that place. Mr. Apted, who is having the trouble, is a hustler in business and some time ago he conceived the idea of utilizing one of their mammoth old caves, from which the plaster has been mined, for mushroom growing. Consent of the stock company was obtained under certain restrictions, and Mr. Apted commenced over a year ago to try his skill. Up to a month or two ago prospects were very flattering. A seventeen acre cave would give him possibilities of supplying all Michigan and an occasional treat for Chicago besides. The temperature, too, does not vary summer or winter and is just right to the degree for raising mushrooms the year round. These are two of the most essential conditions at the start and success seemed imminent, when, all unexpectedly, there came this mighty scourge of little mites; too small to be detected individually by the unaided eye, but in legions sufficient to injure or destroy every mushroom before it is old enough for market. Most of the mushrooms are being destroyed while in the young or pin-point stage. In some beds where the mushrooms were not very plentiful, the mites would gather in large mass meetings, awaiting the arrival of pin-points through the crust. In the larger stools that had escaped at first the mites were burying themselves in groups here and there over the cap.

Such was the condition of affairs on my arrival. Whether we will win the day or yield to this little invader remains for the future to decide. The cave is very dry, and in such an atmosphere the mite thrives and breeds rapidly. If we could create a humid atmosphere like the florist can in fighting the red spider, the question would be solved, but the stock company say that must not be, even though the mushroom industry has to be given up, as it will rot the supports and disintegrate the plaster rock above. Mr. Apted has already tried all the remedies that Grand Rapids people have suggested to him, which is no small number, with only negative results in the main. We shall try several methods not yet definitely tested and with fair prospects that at least one of them will succeed.

If we are successful in banishing the mites, there still remain several species of insects, one of which, a maggot, is quite a serious pest. It bores devious chan-

nels through the inner part of the mushroom in a way very much like the radish and cabbage maggot does in those plants. I have searched entomological literature for information regarding them and the other insects, and have written the department at Washington, D. C., but without success, and I think the field will prove to be a very interesting one for study and experimental work.

Zoological Department.

THE BANANA.

THOMAS GUNSON.

The two varieties of bananas, each bearing a bunch of fruit, attract alike the attention of students and the visiting public in the greenhouse at present.

As the banana is truly the fruit of the laboring classes and can be bought so cheaply nearly every day in the year, it is not surprising that people like to see a plant growing in something like its natural condition.

It is amusing to hear the comments some people make on seeing the banana plant in fruit for the first time, and to note how vastly superior the plant is to any preconceived idea they may have formed of its general appearance.

The banana is one of the aristocrats of the vegetable kingdom, and while it has long been the principal farinaceous food of the people of nearly all tropical and semi-tropical countries, it is only within recent years that its fruit has been used to any extent by people of colder climates.

Though really herbs, bananas assume all the appearances of trees. Their stems, consisting of the sheathing bases of the stalks of the large palm like leaves, are soft, spongy and destitute of wooden structure, yet some species attain a height of twenty-five feet. The stems die after perfecting the fruit, and fresh stems are developed from buds in the root-stock, which is perennial. These stems are the common source from which the plant is propagated for making fresh plantations, and the growth is so rapid that in the West Indian islands, where conditions are favorable, the fruit is usually ripe within ten months of the time of planting the offsets. In the greenhouse with the best treatment we can give them it takes the plant more than twice that length of time to do the same amount of work.

Musa sapientum, the name of the species that supplies the markets of the old and new world, when well grown attains a height of nearly twenty feet. The stem is sur-

mounted by a crown of leaves six to ten feet long by two to three feet broad with a strong fleshy foot-stalk and mid-rib. The flowers spring in great spikes from the center of the crown of leaves and are arranged in whorl-like clusters along the spike, the female flower occupying the base of the spike and the male the apex. The average weight of a bunch is about 25 lbs., but they are often known to exceed 70 or 80 lbs. In the greenhouse two years ago, the dwarf banana, *M. Cavendishii*, matured a bunch of fruit that weighed 65 lbs.

The productive power of the banana is prodigious. On an acre of land it was estimated by Humbolt that it would produce 44 times as much in weight as the potato, and 133 times as much as wheat.

The banana is in many other ways useful to man. The stem yields a juice that is used as an astringent and its spongy pith, when pounded and boiled, forms a nutritious food of a starchy character. All parts of the plant abound in fibre that is adapted to the manufacture of cordage and paper though it has never been utilized to any great extent.

The top of the stem is boiled and eaten as a vegetable and the leaves are used in pickling and for many domestic purposes.

Greenhouse.

NARROW ESCAPE FROM DROWNING.

One day during the recent cold snap Mr. Steele, who has for several years been an employe on the horticultural department, having occasion to cross the river into the college woods east of No. 7, went across on the ice. This was in the morning. After working in the woods all day he returned just at dark, took a light pole in his hands and started to recross the ice. But during the day the ice had softened, and the current, which is here very swift, had cut the ice away underneath until only a thin shell remained, and when near the middle of the stream Mr. Steele suddenly found himself plunged arm-deep into the swift, cold current. He called repeatedly for help, but being nearly half a mile from the nearest house, could make no one hear. He then began breaking his way to shore but here a new danger presented. Every time he attempted to break the ice ahead of him his feet would be lifted from the bottom and he was in imminent danger of being swept under the ice. Thanks to the pole which he had kept in his hands, he was able to brace himself against the current and slowly break the ice from in front until he got to where the water was shallower when he made more rapid progress. After being in the water about half an hour he at last reached the shore and then rapidly made his way to his home about half a mile distant, where a good fire and dry clothing soon restored his normal temperature.

THE MONEY VALUE OF MARL.

Schoolcraft, Mich., March 2, 1896.

DEAR SIR—I send you by mail a sample of shell marl. What do you think of it to use as a fertilizer? Can be delivered here at \$4.30 a ton. Thought it might help me to get a stand of clover.

Yours truly,

W. F. C.

The marl was examined and found to be a very pure marl, containing less than one half of one per cent of sand and a small amount of vegetable matter. The money value of marl consists mainly in the amount of lime it contains. Carbonate of lime contains 56 per cent of lime (CaO), and 44 per cent of carbonic acid. We cannot afford to pay cash for carbonic acid for manure, as it is found abundantly in the air and wind has no money value.

If the marl were pure, a ton would contain 1,120 pounds of lime, or 16 bushels. The question whether the farmer can afford to pay \$4.30 for 16 bushels of lime depends on the further question whether he can buy the lime cheaper.

An agent of the Bellevue Lime Co., of Bellevue, Eaton Co., gave me to understand that they would sell lime, free on board cars at Bellevue, in car load lots at ten cents a bushel. At this rate the ton of marl would be worth \$1.60. Caustic lime is more active than carbonate of lime, and on certain soils (mucky) would give more marked results. Caustic lime is soon changed to carbonate of lime by absorbing carbonic acid from the air.

Marl is abundant in many parts of this state, and where it can be obtained for no expense beyond the cost of handling it, the marl is a cheap and valuable manure, but its money value is not large.

R. C. K.

Chemical Department.

The M. A. C. Record.

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To be entered as second class matter at Lansing, Mich.

This week marks the beginning of a new administration at the Michigan Agricultural College. From the hill-girt valleys of western Pennsylvania has been chosen our leader, a man young in years but old in experience—ripe in scholarly attainments, cultured, refined; a young man who has had many successes but no failures; one whose everyday life has brought him in touch with the best talent in educational circles, and yet has not estranged him from the hardy tillers of the soil.

When Dr. Snyder left Allegheny City to assume control of the first Agricultural College in the land, he left behind in the schools of that city, a monument to tact and persevering energy of which many an older man might well be proud. He left the home of his youth and the companions of his early struggles and successes. In assuming the duties of President of this College he comes among strangers, but strangers who welcome heartily their new leader, and who are ready to bear with him his burdens and to rejoice in his successful achievements.

A FARMERS' INSTITUTE TRIP.

BY K. L. BUTTERFIELD.

By direction of the Board of Agriculture I have visited the states of Ohio, Indiana, and Wisconsin, studying their farmers' institute work. Ohio farmers' institutes are under the management of the Board of Agriculture, and under the immediate supervision of the Secretary of that Board. The appropriation is raised by a tax equal to five mills on every inhabitant, but in no county exceeds the sum of \$200. Two-fifths of the sum raised are paid over to the state treasury to be expended by the Board of Agriculture for institute work, while three-fifths are retained in the county treasury to be drawn for the use of the county institute societies for the local expenses. This year there are held 157 institutes with state aid. In addition to this there are about fifty or sixty independent meetings in the state. No county has over two institutes, and every county in the state but one has at least one institute. The Board arranges the places, circuits, dates, and speakers. Two speakers are sent to each institute, and these two hold three institutes a week; each institute is usually five sessions. The Ohio State University furnishes five speakers for two weeks each, and the Experiment Station a similar quota. The other speakers are well known Ohio farmers and farm writers. They have no "round-up" meeting, but instead an agricultural convention some time in January at Columbus, at which gather representatives of all the various agricultural bodies of the state, and here elect the Board of Agriculture. Proceedings of this convention, together with some of the best local papers read at institutes, are published in a report. There is some talk of the extension of the work in Ohio by somewhat increasing the appropriation, sending out one speaker to a meeting, and thus allowing for the holding of between 300 and 400 institutes per year.

There are some strong points in the Ohio system, one of them being the large number of meetings held for the money expended. The state share is but little more than \$5,000, so that the work seems to be carried on with good economy. Another feature is that the local aid and interest are very marked. I noticed at the meetings a good attendance with a great many bright local men present. The institute work in Ohio has developed the speakers well, and also local talent. On the other hand, I do not quite like the turning over of the institute entirely to the local direction. After the speakers are once assigned, all the rest of the work is done by the local society. They choose whatever topics they wish, and may call upon each speaker from three to five or six times. This, it seems to me, spreads men pretty thin. I doubt if the plan of raising money by taxation to pay for local expenses is necessary or is an education in the right direction. If the local people who get up the institute raise their own funds, I believe they will have a better interest and be more economical. One lack in the Ohio system is the absence of woman's work. Women occasionally take part in the programs

as local speakers, but the state furnishes no lady speakers, and woman's work as we know it in Michigan is entirely wanting. On the whole, however, the Ohio system is a great success. The interest in the work among the people is very marked, and the number of independent institutes is continually increasing. Ohio probably has more well developed institute workers than has any other state.

The Indiana system is not greatly different from that in vogue in Ohio. The state appropriation is a lump sum of \$5,000 per year. There is an institute in each of ninety-two counties, and about twenty-five or thirty independent meetings. Out of this \$5,000 there go \$25 to each of the ninety-two counties for local expenses. The state expenses are paid out of the remainder, thus making a system which is intensely economical. The immediate charge of the work is in the hands of Prof. Latta, with the title of Superintendent of Institutes. The general arrangements, as I said, are about as in Ohio. The meetings are conducted by the local society, although the superintendent endeavors to direct the selection of topics so as to concentrate somewhat upon special topics. A number of lady speakers are furnished by the state, among them being Mrs. Meredith, who is well known to many Michigan people. I think the work of making the institutes popular in Indiana must have been a much greater task than in Ohio, as I judge that the conservative character of the people inclined them to prejudices against the institute work; but so far as I can find out, these have been largely done away with and the work is very popular. The meetings are certainly well attended.

The Wisconsin system is entirely different from either of the others. The work is strongly centralized, the state running the meetings entirely. There are no local societies, the places of meetings being determined upon by petitions largely. The work is under the immediate direction of the Superintendent, who makes out the schedules of dates and meetings, and assigns to each meeting a conductor and an assistant. The programs are made out at the office of the Superintendent and sent to each institute. He also undertakes to advertise the meetings by getting out posters which are distributed by the local people. In addition to the conductor and his assistant, there is usually a specialist who attends the meeting—a dairyman or horticulturist—and he will stay but one day in a place; the others remain through the meeting, the same as do the speakers in Indiana and Ohio. The conductors preside at all sessions. The state appropriation is \$12,000 per year.

There are many good features in the Wisconsin system. Institute work is there organized better than in any other state I know. One feature is the very close supervision given the work. In Superintendent McKerrow the State has almost an ideal head of its institute work. The conductor system has also a great many good features. The conductors are all well trained for their work and succeed in keeping the meetings lively, and especially in eliciting pointed questions. The round-up meeting and the publication of a bulletin are well known features of well established merit. The speakers are all practical and successful farmers, but most of them do not happen to be so well known outside of the State as are many of the workers in Indiana, and especially those in Ohio. There is a good variety of topics on the programs, and rapid questioning of speakers is a feature to be most highly commended. On the other hand, it strikes me that the system is somewhat expensive, as for \$12,000 they hold but 105 two day meetings and 10 one day meetings. Still, the publication of the bulletin makes quite an extra expense. I would hardly want to call the system extravagant, but in comparison with Ohio and Indiana the expenses are heavy. Perhaps the strongest objection to the Wisconsin plan is the lack of local speakers and control; at many of the meetings local talent does appear, but it does not seem to be very much encouraged. In some sections of the state it is evident that local talent has not been developed. There are some minor criticisms that might be made, but I think this is the most serious objection to the Wisconsin plan.

(To be continued.)

CULTURE OF PEPPERMINT.

[Abstract of a paper by Hiram Hunt, of Moreland Township, Muskegon County, read before the Muskegon County Farmers' Institute, Jan. 15, 1896.]

Peppermint is grown in all parts of the world where the climate is not too cold or too dry.

It requires a deep black muck loam for raising the best grades of peppermint.

The soil must be plowed in the fall, so as to save time in the spring and allow the winter frosts to penetrate the soil, so it will heave up and become mellow.

As soon as the frost is out enough so the ground can be stirred go on with the disk harrow or pulverizer and

work the ground until thoroughly pulverized; then go over with a smoothing harrow, which leaves the ground in good shape for planting.

The farmer is now ready to draw the roots, which must be taken from the first year's growth of mint. After plowing out shake the dirt from them and put them in small piles; then cover with a coat of dirt to keep from spoiling.

The ground must be marked with a shovel plow in drills 32 inches apart and from four to six inches deep. Then load the roots onto a wagon and haul them to the field that has been prepared; drop them into the drills, overlapping so that the plants will come up in solid rows.

The earlier the roots can be planted the better it is for the crop, as it gets the benefit of the early spring rains and a longer time for rooting.

As soon as the plant shows through the ground, so you can see the rows, start the cultivator. Go over once a week, and if any weeds show in the rows commence hand weeding and hoeing.

It will be necessary to hoe and hand weed from three to five times during the season to keep the ground stirred. Keep the cultivator going until the runners start. Then let the crop stand until just before harvesting; then go over the ground and pick out all the weeds so as to secure prime oil.

Harvesting begins about the last of August or the first of September, when the plant is in full bloom and shows a dark, copper colored leaf with an oily appearance.

When it is ready to harvest select a hot, dry day; the hotter the day the better for a good yield of oil.

The first year's crop must be mowed with a scythe and raked by hand; the second year's crop may be harvested with a mowing machine and raked with a horse rake.

I am not in favor of letting a crop stand the third year, as the yield is small and the grade of oil inferior. To plow and replant pays the best rent for land, and does away with weeds.

The oil is obtained from the leaves of the plant, so whatever tends to improve the growth of the plant, makes more oil when harvested.

After mowing leave on the ground until the leaves are well wilted.

It is then drawn to the distillery and placed in tubs 5 feet high and 5½ feet wide.

After packing as full as possible, the tubs are closed with covers made to fit. The steam is then let on by a 2-inch pipe passing from the boiler to the bottom of the tub; it then passes up through the mint and out of a 4-inch pipe at the top of the tub with the steam into a condenser, which is a 5-inch tin pipe lying in a trough of cold water; it then passes down through a 2-inch pipe called "the worm," to a receiving can, cold water running on the pipe all the time to condense the steam back into water. So when it comes into the receiving can it is oil and water. The oil rises to the top and is dipped off with a one-half pound dipper and put into cans which hold 20 pounds. It is then ready for market.—*Muskegon Weekly Chronicle*.

BIRD MIGRATION.

The following is an abstract of a circular letter just received from the Migration Committee of the Michigan Ornithological Club. The work proposed is important and interesting and the appeal of the committee should meet with a hearty response.

W. B. B.

Michigan Ornithological Club.

CIRCULAR NO. 1, FEB. 29, 1896.

This committee has been appointed with instructions to arrange and carry out a systematic investigation of the birds of Michigan. This we hope to accomplish through the cooperation of all who may be interested in the ornithology of our state. We hope to have every county in Michigan patrolled by competent observers, who will report to us on the migration, range of species, breeding habits, etc., of our birds. A careful resume of these reports must develop in the course of years into a complete survey of the wonderfully varied and interesting *avi fauna* of Michigan.

We cordially request your cooperation in this work. Will you not agree to send us whatever observations you may be able to make this year? Anything and everything of interest will be appreciated and valued, and due credit will be given all who contribute.

We wish to determine definitely when our birds arrive and depart, or pass through each section of the state; how fast they travel; whether by day or night; which come first, males or females; when and where the first nests are built, and when the last; how long the process of construction takes; the period of incubation; food of adults and young; in fact *everything* regarding all of the birds known to our state.

If you will help us in this work, kindly inform the

chairman of this committee, when full instructions and blanks will be furnished with pleasure. Write any member of this committee, at any time regarding the work. We will be happy in doing anything we can to aid you.

L. W. WATKINS, Manchester, *Chairman*.
W. E. MULLIKEN, Grand Rapids.
T. L. HANKINSON, Agricultural College.
Committee on Bird Migration and Field Work.

AT THE COLLEGE.

Hon. C. J. Monroe visited college last Thursday.

Mrs. Baker returned to her home in Chicago last Friday.

Mrs. Wescott has been suffering with an attack of peritonitis.

S. W. Keifer, with '97, Lyons, Mich., was a visitor at the College last Friday.

Last Thursday Mrs. H. L. Bachtel of Flint, called on her brother, Mr. M. L. Dean.

Norman and Bland Edwards have been kept out of school for some time by whooping-cough.

Scott J. Redfern, '97, returned to College last Friday. He has just closed a four months' school.

Already nearly 500 teachers have applied to Prof. Taft for flower seeds for school-yard adornment.

Gas fixtures have been added to the equipment of the Bacteriological work-room and work in Bacteriology is now going on.

Prof. W. B. Barrows spent last Friday and Saturday at Grand Blanc, examining a collection of minerals, fossils and Indian relics.

A complete set of pulley patterns is being made in the wood shops. Here, too, a cabinet for holding lathe-tool cases will soon be placed.

On Thursday last the mechanical seniors took indicator's diagrams from the tandem compound engine at the works of the Howell Mfg. Co.

Last Wednesday evening Mrs. Woodworth entertained at tea Mrs. Ray S. Baker, Miss Lilian Wheeler, and Messrs. W. O. Hedrick and D. J. Crosby.

Mr. Frank Yebina has some seed of the radishes spoken of in his article in this number, which he would be glad to give to anyone wishing to try them.

A Guinea pig, inoculated with pus from the cow of the Pontiac Asylum herd, mentioned in a recent issue of the RECORD, does not yet show any symptoms of tuberculosis.

A week ago last evening Prof. Smith started for Trumansburg, N. Y., to attend the funeral of a cousin. Before returning he will visit the farm owned by himself and brothers near Ithaca.

President Snyder and family arrived in Lansing last Saturday and will occupy the president's house as soon as their furniture arrives. Dr. Snyder assumed the duties of his office yesterday.

M. A. C. is well represented on the Migration Committee of the Ornithological Club (see circular in another column) as Mr. Watkins is a graduate of 1893 and Mr. Hankinson is one of the class of '98.

Dr. Edwards gave a talk on Shakespeare's Merchant of Venice last Wednesday afternoon. In the evening about fifty of the students saw the play presented by the Hanford Company at Baird's opera house.

The machine shop has just been adding to its equipment new drills, and hammers, a complete set of lathe dogs up to 2½ inches diameter, a Starrett's combination center-square and protractor, and a rotary measuring machine.

"The Continuous use of Condensing Water" and "The Carbonizing of Wooden Lagging on Cylinders and Pipes" are the titles of two very interesting and valuable articles in Power for March. These articles should be read by all mechanical students.

Over Prof. Smith's desk in his office hangs an attractive banner made of the fifty-two blue, red, and white ribbons taken as premiums at the Saginaw and Jackson poultry shows by Mr. Brooks last December and January. The banner is the work of Mrs. Brooks.

Among recent additions to the instrumental equipment of the department of civil engineering is a Fuller's slide rule, imported from London by the College. The new rule is a most ingenious arrangement for making arithmetical calculations, reducing them to purely mechanical processes. The instrument consists of three cylinders telescoped, with various indices attached; its outside diameter is about 4 inches and length, when

extended, about 2 feet. About the outer cylinder is wound a single logarithmic spiral. One acquainted with the ordinary slide rule will appreciate the superiority of the new instrument from the statement that it is equivalent to a straight slide rule 83 feet 4 inches long.

W. D. Groesbeck writes from Washington, D. C., calling attention to the fact that a mechanical engineering course described in one of the leading mechanical papers of the country, and said to be "just what is wanted," is paralleled in many respects by the M. A. C. course.

The Crosby Steam Gage and Valve Company of Boston, Mass., recently presented each member of the senior class in the mechanical course with a copy of the book issued by the company on the steam engine indicator. The Ashcroft Mfg. Company of New York have presented the same class with copies of their book descriptive of the Tabor indicator.

The RECORD would go to press with a strange feeling of incompleteness if it did not have at least one birth or wedding to report from the College each week. This week it is a wedding. Harry P. Gladden, '85, assistant in Horticulture, was married last Tuesday evening to Miss Louise Walter of Delhi. Mr. and Mrs. Gladden will make their home on their farm near North Lansing.

Last Thursday evening the eighteen Bachelors started out in squads of four and five to make calls on the four newly married couples. The calls were a surprise to all but Mr. and Mr. Brooks who in turn surprised the Bachelors by serving delicious refreshments to all who came, excepting the first squad who left before their host was aware that a half hour limit had been previously arranged for all calls.

At the last meeting of the directors of the Michigan Inter-Collegiate Athletic Association, which was held in Jackson, Kalamazoo College was admitted to the association and R. E. Brackett of Lansing was given the contract for making the medals. The next meeting will be held at Albion about the middle of April, at which time the directors will examine the inducements offered by the various college towns which desire the next annual field day.

A week ago last Saturday Dr. Grange was called to Huron Co. to investigate a disease of cattle, which showed upon examination to be lumpy jaw. Quite a number of cattle in the vicinity were affected with this disease. Hog cholera also existed in the same locality. Mr. Parks of Birmingham, Oakland Co., has lost about seventy hogs from this disease. Hog cholera has been reported from several parts of the State ever since the first of January, a very unusual occurrence at this season of the year.

NEWS FROM GRADUATES AND STUDENTS.

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

P. S. Rose, '96, *m.*, will return to College in May.

F. R. Sheldon, with '85, is a grain buyer at Burr Oak.

C. J. Barnum, '94 is teaching at Goodrich, Genesee Co.

M. E. Greeson, '91, teaching, 247 S. Washington St., Kokomo, Ind.

Chas. H. Hoyt, '85, is now on the road for a Columbus, O., paint firm.

R. M. Kedzie, with '93, *m.*, is with the Sterling Furniture Co. of Grand Haven.

Dean Park, *sp.* '94, is now studying in the New York City College of Dentistry.

H. L. Chamberlain, with '97, *m.*, is now employed by Lansing Confectionary Co.

E. M. O'Neil, with '93, has returned to us to take special work under Prof. Vedder.

Frank R. Poss, '94, was recently elected Secretary of the Simons Dry Goods Co. of Lansing.

Peter V. Ross, '95, finished his duties as teacher at Howell and started for Colorado March 24.

Erwin S. Ferry, *sp.* post-graduate in '91, is now Instructor in Physics, University of Wisconsin.

Frank W. Prudden, with '81, is connected with Chicago & Northwestern Railway at Austin, Ill.

L. C. Smith, *m.*, '97, Asst. Cashier Gaylord (Mich.), State Savings Bank, will return to College next year.

C. J. Strang, '78, editor and publisher of the *People's Banner*, Grand Ledge, has sold out to M. L. Phares, who will conduct a paper at Sunfield.

Bulletin 40 of the Oregon Expt. Station is from the pen of U. P. Hedrick, '93, who gives the conclusions he has drawn from a careful survey of the fruit interests of

that State. Bulletin 41 from the same station is a "Spraying Bulletin," issued by Prof. Hedrick and Prof. A. B. Cordley, '88.

Almon E. Hart, *sp.* '86, is now official Court Reporter, District Court, Denver, Col., and a director in the Mt. Hecla Gold Mine Co. of Cripple Creek.

Luther H. Baker, '93, has been elected principal of the Galien, Berrien Co. schools, and will assume the duties of his position about the first of September.

Miss Elizabeth Jeffreys, who was a special student here during the summers of '90-'91, is now engaged in research work in the chemical laboratory of Chicago University.

H. E. Skeels, with '97 *sp.*, Grand Rapids, as a member of the Botanical Committee of the Kent Scientific Institute, will prepare an article on fertilization of orchids for his summer's work.

The *Michigan Farmer* has established a department known as "Associated Farmers Clubs" and placed it in charge of A. C. Bird, '83, of Highland. We congratulate both Mr. Bird and the *Farmer*.

The Coopersville *Observer* contains the following: The banking firm of R. Lillie & Co., Hammond, La., has been incorporated and will be known as the Hammond State Bank. Ros. Lillie, '70, was elected cashier, and D. C. Oaks, '74, is one of the stockholders.

J. Bruff Ware, with '83, representative from Kent Co. in the last Legislature, is Secretary of the Citizens Telephone Co. of Grand Rapids. The company have just ordered 1,800 telephones from the American Electric Co. of Kokomo, Ind., and will soon be competing with the Bell Co.

Carl Bank, '84, Supt. of Preston School of Industry, at Ione, Cal., has disarmed the opposition of Gov. Budd, who vetoed the last appropriation bill passed by the legislature in support of the school. The Governor now says the school is the best and most economically managed institution in the State.

Here is news from a '91 *m.*: "V. S. Hillyer, a young fourth ward Republican, is being mentioned for the nomination as ward alderman to oppose Alderman Teachout, who is a candidate for renomination, and who was supposed to have a walk away. Mr. Hillyer is a member of the ward committee, but aside from that has never held political office."—*Grand Rapids Herald*, March 14.

F. F. Rogers, '83, has been Port Huron's City Engineer for the past five years and will continue in that capacity for at least another year. Previous to 1891 he practiced his profession in Port Huron and Marlette acting as County Surveyor of Sanilac county in the latter place. Private practice offering better inducements he will open a private office at the expiration of his present term of office. He has at his command in the city hall one of the finest city engineer's offices in the State.

AGRICULTURE IN JAPAN.

BY F. YEBINA, '95.

(Concluded.)

Next to rice, more barley is raised than any other cereal, it being grown in all the provinces. Barley, either in the form of flour or in the whole grains, is cooked with varying quantities of rice, thus forming an important article of diet, especially among the farming classes. Wheat perhaps is next in importance, and like barley is raised throughout the empire. Almost no bread is made from this wheat, but *onmen* (a kind of vermicelli), *undon*, *fu*, and other similar preparations, to be eaten with soup, are made in large quantities and exported to a considerable extent. Beans, peas, and buckwheat are also quite generally grown.

The annual yield of rice for the whole empire is about 20,000,000 bushels, the yield per acre varying from 20 to 80 bushels. Of barley and wheat about 3,000,000 bushels of each are raised.

As I said before, these crops are raised in the large fields which surround the village. On his little plot of perhaps two acres in the town stands the farmer's house. In his little garden are grown vegetables and fruits, which make up a great part of the food of the family. About the same vegetables grow in our Japanese gardens that would be found "on the Hort," except that we have no cauliflowers, cabbages, nor tomatoes. One thing remarkable, though, in the garden of the Japanese farmer, is his radishes. They grow to a mammoth size, sometimes two feet long and four inches in diameter. I think some families use a ton or more of these in a year. The largest and finest are dried in the sun and kept for winter, while the rest are put in a sort of a pickle of salt and water. Pickles form an import-

ant part of the diet of the people of our country, and beside the radishes, egg plant, beets, cucumbers and turnips are used in this way.

Except apricots, fruit is seldom used on the table. We have a great deal of fruit, but it is always eaten "between meals." Our apples and cherries are not nearly so good as those grown in this country, but we have very fine pears, prunes, apricots and persimmons. In the southern part oranges and lemons are raised. Pears in Japan take the place that apples do in this country. We have such a variety that we are not without fruit from July to the following spring. The trees grow to an enormous size, often being three feet in diameter and fifty or sixty feet tall. In the spring when in bloom they are veritable mountains of white. The pears themselves are large, many of the winter varieties reaching four inches in diameter. One of these large varieties has a name, Enkolos, meaning "kill dog." The reason for its bearing this name is that once a dog, lying under a tree, was struck on the head and killed by a falling pear.

We have no cultivated small fruits, but raspberries grow wild. I have never seen blackberries, gooseberries, currants, or strawberries growing in our country.

The Japanese farmer keeps but little live stock. Hogs and sheep are not kept at all, and cattle only for purposes of work. All our woolen fabrics are imported from China and the European countries, and so little is used that we have no need of sheep for their wool. Silk and cotton are worn almost entirely. Milk is hardly known as an article of food, and is used only as prescribed by the physician. Cattle were first brought into Japan from China, and kept secretly by the royal families. They were considered almost sacred. Now a number of the pure breeds of America have been imported into our country. Horses are now quite generally used, and even the poor farmer keeps one horse. It is not yet like this country where the number of horses like the number of dogs indicates the poverty of their owner.

The house of the Japanese farmer is not an elaborate affair, but it is comfortable. It may be one or two stories high, with very steep thatched roof. There are five or more rooms—parlor, sitting-room, a large kitchen, store-room, and bed-rooms, while the parlor and sitting-room are often used as bed-rooms. Chairs are not used at all, and only low individual tables are used at meal time, from which the food is eaten without the aid of knife or fork. Chop sticks are used. The beds are made up on the floor, and mattresses and bedding removed to the closet during the day.

Upon the opening of the seaports of our country to the world by Commodore Perry in 1854, the Sunrise Country was awakened from a long, sweet dream to find that civilization had been advancing during her slumbers. Since that time her history has been one of advancement. She has sent her sons to the great new world and they have returned with the best knowledge of this nineteenth century to enlighten their fellow countrymen. Many Americans have held positions in our colleges and among them several from this, our Agricultural College. The influence of Christian missionaries has done its part: Caste is broken, and the farmer and the mechanic are no longer "low class" on account of their occupations.

Our government supports six experimental stations and two agricultural universities, besides granting aid to numerous provincial agricultural and mechanical colleges. Upon awakening some forty years ago our little empire found herself behind the rest of the world but she is striving harder and harder to reach the front rank of nations, and Nepon is, I think, progressing.

National pride prompts me to boast that Nepon is the only country in Asia with parliamentary form of government. Nepon is the only country in the world which has been ruled by but a single dynasty. Nepon is the only country in the world that has never been conquered by a foreign foe.

SEEPAGE WATERS.

ABSTRACT BY A. A. CROZIER.

Bulletin 33 of the Colorado Experiment Station, by L. G. Carpenter, '79, on the "Seepage or Return Waters from Irrigation" is a valuable contribution to an important but little understood subject. "In countries where irrigation is practiced it is often the case that, though streams may be drained dry by the diversion of the waters into canals, not far below the stream will again be of considerable size, and this without the inflow of visible tributaries." This renewal of the stream comes from irrigating water which has penetrated the soil and found its way back into the old channel. In the valley of the Poudre Professor Carpenter estimates that at the present time about one-third of the water drawn from the canals and conducted upon the fields

for irrigating purposes finds its way through the soil back to the river, where it is available again for irrigation farther down the valley. At the prices at which sales have been made this return water of the Poudre river is worth nearly half a million dollars annually, and in the valley of the Platte from two to three million dollars. The longer the lands are under irrigation the more of this seepage water is returned.

The return of the surplus water to the main stream is slow, and it may be several years before water from some of the canals finds its way back into the river. The water not only passes through the soil slowly but must first fill the deeper subsoil before it can again reach the river. This filling of the subsoil in irrigated districts manifests itself in various ways. Wells are less deep, springs and marshes appear, and streams previously dry begin to flow. The return of these irrigating or seepage waters is practically uniform throughout the year and serves materially to regulate the flow of rivers which pass through irrigated districts. The withdrawal of the head waters of a stream for irrigating purposes, particularly if it is done when the water is high, may therefore be an actual benefit to owners farther down the stream by promoting an increased flow later in the season.

POULTRY DEPARTMENT.

In the issue of March 10 brief mention was made of the feeding experiments that were being carried on in the poultry department. It will not be out of place now to speak of what may be seen in the breeding house of this department.

As one enters the house he sees on each side of the hall several pens each containing a half dozen or more pure bred fowls, which are at present making a business of producing eggs for sittings. There are ten breeds represented, including the following: Single Comb Black Leghorns, Rose Comb Black Leghorns, Black Minorcas, Silver Pencilled Hamburgs, Black Hamburgs, Light Brahmas, Golden Wyandottes, Houdans, Barred Plymouth Rocks, and White Plymouth Rocks. Two more breeds, the Partridge Cochin and the Black Langshan, will be added to the flock this spring.

Five hens are now sitting and the incubator contains 208 eggs that are due to hatch today. The incubator will be refilled at once. The department will soon add to its equipment a new Kennesaw incubator from W. H. Nichols, Marietta, Ga. Mr. Brooks is now booking orders for sittings and will probably be able to fill any order within two or three days after it is received.

WOOD ASHES.

MUSKEGON, MICH., Feb. 13, 1896.

I enclose a sample of ashes that I would like very much to have analyzed. I can buy quite a quantity of them but would like to know what I can afford to pay for them as fertilizer for fruit. I think they are extra good ashes from what tests I am able to use, but as they will cost me more than I have ever paid for ashes before will be very thankful for any information on the subject and am willing to pay for it if there is any charge.

Very truly yours,

H. C. R.

These ashes show on analysis the following results:

	Per cent.
Real potash (K_2O)	4.58
Insoluble phosphoric acid	.87
Material insoluble in acid—sand, etc.	28.55

These ashes contain more than 25 per cent of inactive material, probably soil in careless collecting of the ashes. Estimated by the amount of potash and phosphoric acid, they are worth \$5.93 per ton.

R. C. K.
Chemical Department.

IDENTIFYING WHEAT BY THE KERNEL.

Mr. N. A. Cobb, of New South Wales, Australia, has been studying wheats with the view of obtaining more definite means of identifying varieties by the appearance of the kernels alone. His results from over 4,000 measurements of a large number of varieties are quite suggestive. Among other things he concludes:

1. That bearded wheats tend to produce grains long in proportion to their width.
2. That club-headed wheats tend to produce grains wide and flat in proportion to their length.
3. That bearded wheats tend to produce large grains.
4. That mid-season varieties produce the largest grains.
5. That the longer a grain is in proportion to its width the darker it is likely to be.
6. That elongated, roundish grains, on the whole, prevail among rust-resistant varieties.

FULL OF INTEREST TO STUDENTS

"THE HARP OF THE SENSES; OR
THE SECRET OF CHARACTER BUILDING."

Lecture by Prof. J. B. DeMotte

Opera House, Friday March 27

Regular Admission, 50c; to Students 25c.

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FOR SALE

2 Registered Shorthorn Bull Calves.

One roan, calved June 18, 1895, sired by the famous Cruickshank show and stock bull, Volunteer, 101205. Dam College Victoria C.

One red, calved April 3, 1895. Sire Volunteer; dam College Mysie 4th, tracing to Imported Mysie 38th.

1 Red Polled Bull Calf Sired by Jim Corbett, dam Cara, 8393. A deep red, calved July 7, 1895.

1 Holstein Bull Calf A white and black calf, sire Maurice Clothilde, 17638, dam College Pauline Wayne, 30900, calved Feb. 13, 1896.

ALSO 10 SHROPSHIRE RAM LAMBS

All Stock which is not Registered is Eligible.

ADDRESS INQUIRIES TO CLINTON D. SMITH,
Agricultural College, Mich.

The Questions

For Entrance Examinations to

M. A. C.

Have been placed in the hands of the

County

School Commissioners

If you wish to enter the College, go to the Spring Teachers' Examination at the County Seat of your County **Thursday and Friday, March 26 and 27**, and ask for

M. A. C. Entrance Examination Questions

Third Grade Teachers' Certificate also admits without further examination.

CLASSES

In the Spring Field Work in Agriculture and Horticulture will

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Work on **April 6**. New classes in Breeds of Live Stock, Drawing, Physics, Elementary Chemistry, Civics, Horticulture, Political Economy, Logic, and Shop Work

BEGAN

Their work four weeks ago. Have you?

BEGUN

To think of attending the M. A. C. this spring? Don't lose time. Classes are moving.

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