

The M. A. C. Record.

VOL. 6.

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No. 36.

Intercollegiate Field Day.

The annual field day was held this year at Hillsdale on the 7th and 8th of June, and again by an overwhelming majority the Michigan Agricultural College maintained its yearly supremacy.

Of the 19 track events on which points are counted, M. A. C. piled up 75; Albion and Hillsdale tied for second place at 29 each; Normals 17; Olivet 12; and Kalamazoo 8. The indoor meet was also won by M. A. C., winning three firsts and two seconds, making 21 points. The Normals came second with one first and five seconds, a total of 20 points. Albion was third by three firsts, thus winning 15.

Schultz, M. A. C., was the acknowledged champion of the meet. Keene Fitzpatrick, referee, director of athletics at the U. of M., said that Schultz was the best all-round athlete he had ever seen. Taking into consideration speed, distances covered, perfection of form, points and ease of performance, he is undoubtedly the best all-round athlete that the M. I. A. A. ever saw. Last year he took one first, one second and two thirds; this year he won six firsts, one second and one third, with better men to contest against than last year. For some reason he did not do himself justice in the standing broad jump, as he easily clears over ten feet and several inches in practice regularly, but only made 9 ft. 11½ in.

He was forging ahead of the other men in the 220 hurdles and had a lead on them when a most unfortunate accident happened; one of his shoe strings broke and his shoe came off just after jumping the fourth hurdle. He pluckily finished the race, however, and came in a good third in the record breaking time of 26.45 seconds. Schultz always runs stronger the last half of a race, and if his shoe had not come off he would without doubt have come in first and lowered the record by one or two more fifths.

Carrier is a good walker and took the mile walk easily, and the only regret in this race was that the athletic association did not feel able to send Seelye also, who would just as easily have won second place.

Carpenter surprised every one by taking the standing broad jump over Schultz at 10 ft. 1½ in.

Conyne and Rae did most excellent work in the bicycle races, the former taking first in both the quarter and mile, and was just as good for first in the five mile, but just before the final spurt the front wheel of Nicholas, Albion, got caught in Conyne's pedal, in consequence of which Nicholas took a spill, but Conyne managed to get loose without a tumble but lost his pedal, and so only came in third, with Rae second and Fuller, Olivet, first.

Driskel put up a plucky finish in the half mile. He and Widrig, Albion, were far ahead of the other contestants, and Widrig won out in an excitingly close finish simply because he had a stronger constitution.

Malone was unlucky in drawing seventh place in the quarter mile

dash and was pocketed until the home stretch, when he managed to escape and let himself out, clearing every one except DePew who had a big lead and who had drawn first position at the start. The finish between these two was of high strung interest. At the last fifty yards DePew was far ahead when Malone got clear of the bunch; both were sprinting to their best ability; Malone gradually drew up almost even with DePew, but the tape was reached before he could pass him.

The relay race started with Schultz against Church, Albion's crack quarter miler, besides Kazoo's fast man; and after all his previous successful efforts Shultz won the first quarter over Church by at least three feet. Driskel then started for the second quarter against Hathaway, Albion, and after a fine exhibition of running on nerve finished about five yards behind Albion. This gave Albion's freshman about



twice that distance for a lead. Edgar, M. A. C. started after Albion at a tremendous pace and gained on him, but the pace began to tell at the finish, and about five more yards were lost, with Albion's last man starting off with a fresh lead of at least twenty yards. With some runners, this big handicap would have been a killer, but not so with Malone, M. A. C.'s last man, who started in at a terrific gait and kept it up to the very finish, and actually gained two-thirds of the distance between him and Widrig. This last quarter was run by Widrig in 52 and one-fifth sec. Malone, by gaining at least 40 feet on him must have run the quarter in 50 sec. We wish he had only been ten yards behind at the start of that last quarter. The relay was run in 3:36.1-5.

Following is the full list of track events, performances and winners:

100 yards, Schultz, M. A. C., first, time, 10 3-5; second, DePew, Hillsdale; third, Koster, Kalamazoo.

220 yards, Schultz, M. A. C., first, time, 23 4-5; second, Malone, M. A. C.; third, DePew, Hillsdale.

440 yards, DePew, Hillsdale, first, time, 53 sec.; second, Malone, M. A. C.; third, Koster, Kalamazoo.

880 yards, Widrig, Albion, first, time, 2:8 2-5; second, Driskel, M. A. C.; third, Hill, Albion.

Mile run, Schoch, Kalamazoo,

first, time, 4:56; second, Ward, Hillsdale; third, Hill, Albion.

Walk, Carrier, M. A. C., first, time, 8:24 1-5; second, Walser, Ypsilanti; third, Clarke, Olivet.

120 yard hurdles, DePew, Hillsdale, first, time, 17 sec.; second, Church, Albion; third, Marshall, Albion.

220 yd. hurdle, DePew, Hillsdale, first, time, 26 4-5; second, Church, Albion; third, Schultz, M. A. C.

1/4 mile bike Conyne, M. A. C., first, time, 37 2-5; second, Frazer, Ypsilanti; third, Bushnell, Kalamazoo.

Mile bike, Conyne, M. A. C., first, time, 2:43 2-5; second, Rae, M. A. C.; third, Fuller, Olivet.

5 mile bike, Fuller, Olivet, first, time, 14:8 2-5; second, Rae, M. A. C.; third, Conyne, M. A. C.

Standing broad jump, Carpenter, M. A. C., first, distance 10 ft. 1½ in. second, Schultz, M. A. C.; third, Marshall, Albion.

overcame Brunger after a most severe struggle.

In the Individual Club Swinging, Fuller, M. A. C., took first; and Murray, Ypsilanti, second.

Barringer, M. A. C., threw both Rogner, Ypsilanti, and Taylor, Olivet, in the light weight class. Rogner took second place by winning over Taylor.

The Horizontal Bar saw only two entries, both from Ypsilanti. Whitcomb took first and Payne second.

The welter weight brought out some pretty work. Rudolph, M. A. C. and Excelby, Albion, had a close bout, it being believed by the spectators that at one time the latter was thrown, but the referee decided in favor of Excelby.

Rudolph and Rowe, Hillsdale, then worked for second place, the bout going to Rudolph. In the heavy weight, Maddock, Albion, and Steckle, Olivet, decided their bout in short order, the former winning. In the second bout, Geib, M. A. C. lost to Wolfe, Ypsilanti. The final bout was won by Maddock.

Only two contested in the feather weight, Bryant, M. A. C. and Payne, Ypsilanti. Bryant won in a few seconds.

M. A. C. won the indoor meet over Ypsilanti, by one point, the standing being, M. A. C., 51; Normals, 20; Albion, 15. Just after the bout between Excelby and Brunger, M. A. C., Albion's coach remarked that that was the hardest and closest match Excelby had ever had. Excelby has been noted as the best welter and middle-weight college wrestler in the state.

TENNIS SECTION.

The tennis tournament was held out at the college and began Thursday afternoon. Sheldon, M. A. C. won his set from Rogers, Normal; Hyney, Albion, won from Curdy, Kalamazoo, in the preliminaries. The finals between Sheldon and Hyney was the prettiest exhibition of gents' singles ever played at the intercollegiate. Sheldon, M. A. C. was the favorite with the spectators and constantly surprised them by the ease and accuracy of his returns. After five close and exciting sets, however, Hyney, Albion, won out by a close margin, 6 to 4.

In men's doubles, Sheldon and Willett, M. A. C., took the set from Whitcomb and Rogers, Normal, and Hyney and Mathews, Albion, cleaned up on Curdy and McHarness, Kalamazoo. Albion's men also won their set from Bagley and Fenn, Hillsdale.

The finals in men's doubles found M. A. C. pitted against Albion again for first place, and Albion once more came out victor after a close contest. Hillsdale took third in the doubles.

The ladies' singles finished with Miss Perrine, Albion, first; Miss Corbett, Hillsdale, second; and Miss Nolan, M. A. C., third. This is the first time M. A. C. ever won a point in ladies' singles.

The Misses Perrine and Hunt, Albion, took first in doubles over the Misses Corbett and Cole, of Hillsdale.

[Continued on Page 7.]

INDOOR MEET.

A higher grade of wrestling was exhibited than usual in the indoor meet held at Baw Beese Park, about two miles from Hillsdale.

In the middle weight Excelby, Albion, won his bout with Wolfe, Ypsilanti. Following them, Brunger, M. A. C., threw DuRoss of Hillsdale. In the finals, Excelby

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Communications and other matter pertaining to the contents of the RECORD should be sent to Howard Edwards, Editor of the RECORD.

That the professions of law and medicine are overcrowded is well known to every observer. The young man now entering one of these professions must be ready to spend years in patiently waiting for business to come his way. Very often he is driven to seek other employment. This is not true of earnest young men of fair ability who take courses in technical schools. There is a constant demand for young men of ability who graduate from our agricultural or engineering courses, and with prospects for an income that will average equal at least to that of those engaged in the learned professions.

Do you think of entering college next year? If so you should decide soon. Your future will be determined very largely by your decision in this matter. If the next five years drift by it will then be too late and you may regret ever afterwards that you did not make the start when you had the opportunity to do so. The advantages which a college education brings to any man or woman are too numerous to be discussed here; yet to every one possessed with the necessary energy and ability these advantages are open. A large percentage of the young men and young women now in college in this country are earning their own way. The person who tries to look ahead four years and wonder what he would do with an education after he got it, as though it was so much merchandise to be disposed of, will never get along very far. But the young man or woman who is ambitious to make the most out of life, and who is willing to trust the future and not try to look too far ahead, will succeed. There never has been in the history of this country a greater demand for well trained, upright men and women than at the present time. It might be well, however, to add right here that character is the greatest qualification, and education without it is of little consequence, but education with it is being sought for more earnestly than ever before.

If you have been thinking of entering some college, make up your mind to do so and let nothing interfere with your carrying out this purpose. In this double edition an effort is made to bring to the attention of our young friends some of the advantages offered by this College in the way of general and practical training. This number lays particular stress on our general or Agricultural Course. A previous number emphasized our course for young women, and in a future number will be set forth the advantages of the Mechanical Course. It is quite difficult to separate these courses distinctly. The work in science, English, etc., as set forth in this number is largely the same as offered in the Women's Course, and to some extent the same as taught to engineering students.

The College is larger by far than any one of its departments, and while it strives to turn out well trained men and women in technical lines, its first object is to give to its students a high grade of intellectual training.

The Agricultural Course, while giving a splendid knowledge of scientific and practical agriculture, at the same time gives a broad, general training. The graduates from this course have demonstrated over and over again that in mental equipment they are not a whit inferior to other college men who have graduated from classical and purely literary courses. In the last Inter-Collegiate Oratorical contest, in which eight colleges of the State took part, the representative of this College, who was a senior in this course, ranked second in thought and composition. The man who ranked highest as a debater in our University three years ago was a graduate of this department. An ex-State Superintendent of Public Instruction, as well as a number of very prominent judges and other prominent professional men graduated from this course of study. From this department have gone forth many men who are well known teachers. Nearly every large university in the country has graduates from this department in its faculty. Bailey and Carpenter of Cornell, Daniels of Wisconsin University, Bessey of Nebraska University are a few who may be said to have a national reputation.

Many young people are liable to think that because this course is designated as agricultural, it fits only for farming. It does fit for this calling, but it does much more than this. It fits for living on a high plane of intellectual life. A course of study may be practical and deal with practical subjects and at the same time give splendid mental training. It is generally conceded now by almost all educators that there is as much mental discipline to be gained by the study of the natural sciences when properly taught as from study of the ancient languages.

Do not throw this paper aside without reading carefully the work offered in botany, chemistry, physics, entomology, bacteriology, English, mathematics, and the various phases of practical work. As far as the equipment of laboratories and ability of teaching force are concerned this College will compare very favorably with the best in the country.

By taking this course a young

man has two strings to his bow. After completing his course if he desires to enter professional life he is well prepared to do so. If he desires to teach some branch of science or practical agriculture or return to the farm again, he has the very best possible training to enable him to make a success of his life work.

J. L. SNYDER.

Death of Norman Edwards.

The sad news of the death of Norman Edwards reached the College on Monday morning. He passed away on Sabbath morning at their old home, Thoroughfare, Va. It was not altogether unexpected as Dr. Edwards had been called by telegram to Virginia on last Friday. Norman was a strong, rugged boy until about the middle of March when he was taken ill with a severe pain in his side accompanied with high fever. His trouble was thought by his physicians to be congestion of the liver. In a few days his fever subsided and he was able to be about. He entered College at the beginning of this term but soon took ill again and returned to the Hospital. His illness at this time was very similar to the first attack. There were several consultations of physicians, but no satisfactory diagnosis of the case was made; the opinion of the physicians rather favored malarial fever as the probable trouble.

It will be remembered by the readers of the RECORD that Mrs. Edwards was in poor health a few months ago and that she, with the two younger children, Bland and Mildred, returned to their old home in Virginia with the hope that the warmer climate might improve her condition. After reaching home she had a severe attack of typhoid fever. The two children were also ill with the same disease. When Norman was taken ill she was not able to return North. After several weeks of worry Dr. Edwards decided to take Norman to their home in Virginia. While he was quite weak, the trip was made successfully and without any apparent harm to the patient. In the course of a week, however, another relapse occurred, but in a few days the fever left him again and he was eleven days without any fever. But during the time he did not seem to gain strength and when the fever returned it found him so reduced that he was unable to hold out longer against it and sank calmly into his last, long sleep. His physicians in Virginia pronounced the disease typhoid fever.

It has been nearly five years since death came to a College student, yet of the students in college last year he is the sixth to pass away. The other five had withdrawn from College before their demise.

Norman will be very much missed on the campus. He was always courteous and cheerful. His life was clean and upright. He developed slowly and to those who knew him intimately he seemed more like the boy of sixteen than of nineteen. He was full of life, ambitious, had a good mind; was nearly half way through his college course, and gave promise of developing into a strong and good man. He was taken away just as the hope of his parents and friends began to be realized, but he has left behind an unsullied record which they can recall with proud satisfaction.

"Long, long may their hearts with such memories be filled,
Like the vase in which water has once been distilled;
You may break, you may shatter that vase if you will
But the scent of the roses will cling round it still."

The sympathy of the College people go out to Dr. and Mrs. Edwards in these dark hours. They are passing through a severe ordeal, but we know they are brave and that their lives are so anchored to the Rock of Safety that they can take up the burdens of life again and toil on until the "day break and the shadows flee away."

J. L. SNYDER.

Agriculture.

For convenience the instruction in Agriculture is divided into, first—Agronomy, including a study of soils, Soil Physics, Farm Mechanics and Farm Crops. Second—Animal Husbandry, including Dairy Husbandry, Stock Judging, Stock Breeding and Stock Feeding. All of these subjects as will be seen by the brief outlines following, are given due prominence in our Agricultural Course. At the beginning of the winter term of the Junior year the student is given the privilege of devoting his time to the study of some particular phase of farming that appears at the time to be of most importance and value to him. During the past year three seniors have been making a special study of Dairy Husbandry, three of soils, and ten of Animal Husbandry.

EQUIPMENT FOR AGRICULTURAL INSTRUCTION.

It would be folly to undertake to teach agriculture without ample equipment. Besides the soils laboratory the student has a more extensive laboratory where he can study soils and crops, where he can observe and get practical results; namely, a 676 acre farm equipped with all modern machinery and labor-saving devices.

The student can see the operations recommended in the class room executed upon the farm and judge for himself of their practicability.

The six stock barns are filled with high class domestic animals of the various breeds found to be most valuable for Michigan conditions.

Purchases of cattle, sheep and swine will be made during the year so that the already creditable equipment will be greatly strengthened.

The modern dairy building recently constructed, materially strengthens our equipment for giving instruction.

HERBERT W. MUMFORD.

AGRONOMY.

The work in Agronomy may be briefly summed up as follows:

In the fall term of the Freshman year four weeks are devoted to the study of the history, classification and distribution of soils. Especial attention is given to the more important agencies operative in the building of soils and to other agencies active in destroying soils already formed. Nature's methods of using the former and of resisting the latter are studied with a view to their practical application on the farm.

In the spring term of the Freshman year soils are studied in their relation to growing crops. The importance of right moisture, tem-

perature, and air conditions of the soil are emphasized and the manner in which these conditions may be governed by tillage, drainage, etc., is shown. Here again nature's methods are studied so far as they are known.

The more important farm crops are taken up, their importance, needs and the principles underlying their production are discussed.

The leading types of farm implements and machinery are studied as to their uses, care, and management.

Seven weeks of the Sophomore fall term are devoted to:

(1). To laboratory work. This includes the mechanical analysis of soils, determinations of moisture in soils, green and dry fodders, grains and root crops; the study of air and moisture movements in the soils; the study of the principles of draft, etc.

(2). To lectures on construction of roads and on the construction of farm buildings, giving especial attention to the planning, ventilating, and lighting of the same.

During the winter term of the Junior year those students electing Agricultural Experimentation give their attention to the history and work of the United States Department of Agriculture, to the history, work and literature of experiment stations, and to the principles of experimentation. This work embraces lectures and individual reading.

Each student plans a practical experiment, and the reasons for and the plans of each experiment are submitted to the class for criticism and suggestion.

During the spring term each student preforms the experiment he has planned, afterwards submitting a formal report of the results of his work. In the execution of this work the student is thrown largely upon his own responsibility and some very creditable and useful results have been obtained.

The fall term and spring term of the Senior year are given to Soil Physics in which by laboratory methods the physical properties of soils and their relations to observed phenomena are further studied. The apparatus employed is of the newest type and open up lines of study of a highly practical and satisfactory nature as time promises to demonstrate.

J. A. JEFFERY.

ANIMAL HUSBANDRY, STOCK JUDGING, STOCK BREEDING AND STOCK FEEDING.

While it is true that the expert judge is born, not made, and that we can expect but a small percentage of skilled judges from the men who take this work, we believe it is of great practical advantage and has a direct money value for every student who later in life may be connected with any line of Animal Industry.

In the Freshman year a course of lectures is delivered upon the origin, history, and characteristics of the various breeds of Pure Bred Live Stock, supplemented by fifty hours of practical work. In this, the beginner is first familiarized with the various technical terms used, the endeavor being made to teach him by sight and touch to discern the desirable and undesirable in form and conformation. But few of our students, entering the course have had any experience with high-class

stock; we must therefore, endeavor to have created in their minds *ideal types* for every breed and bring each to that point where, almost unconsciously, he will find himself measuring every animal he sees by its breed standard.

In the work in Stock Breeding and the principles which govern it, the various laws of breeding are fully dealt with, practical illustrations of their application in the work of early and modern breeders being given.

With those seniors specializing in Live Stock, a large amount of time is spent in advanced work studying in detail points of similarity and difference between various breed types and in comparing typical specimens of different breeds with regard to their utility for specific purposes. The many typical specimens in the College herds and flocks are freely used in this work.

The work in Feeds and Feeding is quite comprehensive in character, touching as it does upon the various

iors who intend to become dairy specialists.

In the Farm Dairy Work, which is given to both the Agricultural Sophomores of the College and to Special Short Course students, the aim is to teach the student the latest and most approved methods of making butter on the farm, the use and application of the Babcock test, the methods for determining the profitability of the individual cows of a herd, and the necessity of scrupulous cleanliness in all dairy work.

The aim of the Creamery course is to train young men in the practical operations of all details of creamery work. In this course the student goes through the practical operations of receiving, sampling and weighing milk, learns to operate the various styles of cream separators, determine their efficiency in creaming and economy in operating, and examines the character of the cream delivered by each. Special emphasis is laid upon ripening cream with pure cultures of bacteria. The

daily practice in butter making, cheese making, and laboratory practice.

The dairy school will soon be turned into a model creamery and cheese factory by the patronage of the milk producers in the immediate vicinity of the College. With this patronage the College will receive about 3000 lbs. of milk daily. This added feature will make this a model dairy school, whose scope of work compares favorably with that of any other similar institution in the land.

JOHN MICHELS.

Horticulture.

AS A SCIENCE.

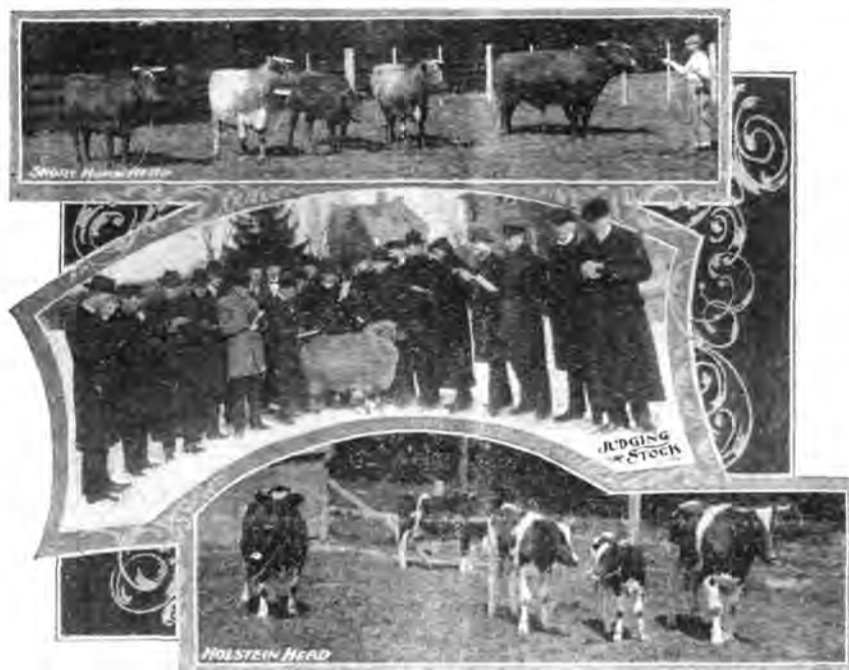
The time is not far distant when certain phases of agriculture and horticulture will have a place in the curriculum of our colleges. Teachers of science are beginning to recognize that in their scientific aspects they have a value distinct from and in some ways superior to the other natural sciences. Why restrict the study of life to wild life? Is not the horticulturist a practical working botanist? In his constant association with them should he not know plants even better than does the laboratory botanist? In view of the fact that Darwin and Weismann, not to mention other great scientists, drew their most initiative illustrations and deduced their chiefest principles from animals and plants under domestication, it is remarkable that teachers and investigators in science have not recognized more fully agriculture and horticulture as a means of teaching natural science.

The horticulturist best of all workers in natural science can bring direct specific proof on such questions as; the influence of climate on plants; the transmission of acquired characters; the changes due to environment; he can create new species; he can break up old ones into varied forms; in short, he moulds and modifies vegetable life at will. These are but illustrations. There are other lines of inquiry as striking and taken together they furnish a great field for scientific research.

It follows then that horticulture must possess the factors which give the natural sciences their value in our schools. In its study we attempt to teach habits of observation and comparison, of investigation, and of orderly thinking, and that, too, combined with direct technical training. The study of horticulture should broaden a student's mind, should make him more accurate in his judgments, more cautious in generalizing, and more alert and fruitful in his investigations.

AS AN ART.

A technical education in horticulture as given in a college should not be considered as a trade. It could not be expected that with the various phases of horticulture taught and the many related studies required, that a man should attain the manual drill to be had in serving an apprenticeship. Rather the idea is to show the relationship of the art to the science—to show the interdependence of the one upon the other. Neither is it considered that the knowledge attained is of very high importance, the giving of inspiration and the enkindling of interest and enthusiasm being more important. This knowledge, however, though incidental, is always meant to be practical. The art is in most courses subordinate to the science, following the principles of the latter,



intimately connected processes which bring into a triangle of mutual support the Soil, the Plant, and the Animal. It is taken up in the Junior year when the student has had work in Botany and Organic Chemistry giving him a knowledge of plant structure and composition. His work in Veterinary Science has taught him something of the various vital processes of the animal body. In this study we deal briefly with the general maintenance needs of the animal economy and any specific variations due to the requirements of any special production as beef, milk or work. The composition of the various plants grown upon the farm is dealt with with a view to determining to what class of animal production each may be made to contribute most economically.

In brief, the work in Animal Husbandry aims to teach the prospective stock man how he may select the class of animals best suited to the object he has in view, while from that under the second division he should secure knowledge enabling him to utilize the feed-stuffs at his disposal in such a manner as to obtain the greatest net profit.

J. J. FERGUSON.

DAIRY HUSBANDRY.

The scope of the dairy work at M. A. C. may be grouped under the following sub-divisions:

1st, Farm Dairy Work; 2d, Creamery Work; 3d, Cheese Making; and 4th, elective work for sen-

student learns to handle the old as well as the new styles of churns and butter workers, familiarizes himself with the various devices used for heating the milk as well as those used for cooling the cream. This work is supplemented by daily lectures on the theory and art of butter making, the chemistry and physics of milk, milk fermentations and their relation to filth, and the kind and amount of adulterations of milk. Daily practice is given in scoring butter.

In the cheese making course the student learns to make the typical Cheddar Cheese as well as the so-called Michigan cheese. He is given thorough drill in the use of the rennet test and the Babcock test. He learns how to control gassy and over-ripe milk, familiarizes himself with the various kinds of curd-milks, and learns the use of the various commercial starters in cheese making. The daily practical work is supplemented by lectures on the theory and art of cheese making, cheese factory construction, and the proper methods of cheese curing.

The senior elective work consists of daily lectures during the fall and spring terms, on the theory and art of butter and cheese making, milk testing, the chemistry and physics of milk, butter, milk and cheese analysis, milk fermentations, the study of dairy breeds, and the methods of determining the value of the individual cows of each breed. The lectures are supplemented by

which, once learned, should be a possession forever, rather than depending upon the rules of the art given to be memorized, and which, in most cases, are soon forgotten.

The prospective student asks what the advantage of a college training in horticulture is over a four years apprenticeship in horticulture. The advantage is this: the man who serves the apprenticeship can graft better, pot plants better, and can plough a straighter garden furrow, but the college man can manage an orchard, a greenhouse or a garden better than the other. Through a college training a horticulturist should be less opinionated, more open to conviction and ready to be taught, more self reliant, should know what men are doing in science and be able to apply their discoveries to his work, should be more alert in discovering his neighbor's improved methods, and more prompt to adopt them. But not only is he then a better all-around horticulturist, but he is a broader-minded, more progressive citizen and happier in his greater knowledge, whatever his surroundings may be.

COURSES.

There can be no specific course which is best for all students in horticulture. The training must vary according to the trend of mind and the capacity of the student, and the particular branch which each may wish to follow. To some extent the work must depend upon seasons and weather, and the convenience of getting material. For these reasons all of the courses below are more or less flexible. In none of them is the teaching meant to be empirical or didactic, but teacher and student work hand in hand.

1. Vegetable Gardening; including plant propagation. All of the methods of plant propagation are studied and the vegetable crops receive consideration from the standpoint of their botany, history and special cultural requirements.

2. Pomology. A study of the fruits of this climate; the means of improving them, and the methods of growing them.

3. Landscape-gardening. Considered as one of the arts of design—a fine art.

4. Floriculture and Vegetable Farming. Studied from the standpoint of the botanist and plant improver as well as from that of the commercial grower.

5. Spraying of Plants. The history and principles and practice of spraying.

6. Plant Physiology. A knowledge of the function of the organs of plants is at the very foundation of every course in horticulture.

7. Evolution of Orchard and Garden Plants. This course treats of the modification of plants through the efforts of the horticulturist, and, incidentally, the bearing of the whole matter upon organic evolution.

8. Commercial Horticulture. Advanced work upon such horticultural subjects as students may elect.

In connection with all of the above courses considerable general reading is required, and excursions are made, when opportunity offers, to orchards, nurseries, parks and greenhouses. With the first five, in addition to the hour in the class room, two hours per day are spent in the orchards, garden or on the campus at practical work. About half of this work is paid for.

This laboratory work is in some

respects most important, in that it is here that the art must be taught, and in that, here, the peculiar bent of each student is more or less brought out. A thesis recording the results of original investigation is required for graduation.

U. P. HEDRICK.

Zoology and Physiology.

The department of Zoology and Physiology takes charge of all the preliminary work in the agricultural course which relates to the animal world. Some definite knowledge of the structure and workings of animal organisms, from the simple worm to the complex human being is necessary before special studies in animal feeding, stock-breeding, veterinary science, heredity, and kindred subjects can be taken up with any expectation of fair results.

Thus it has seemed best to require a term or two of human and comparative anatomy and physiology before the student even begins the

hours a day for a week or two in dissecting and studying this animal, following somewhat the same course as would be taken by the medical student in the university dissecting room. A life-sized Auzoux model of the human body is kept close at hand for comparison and even the most apathetic student generally gets interested, and often enthusiastic, before the completion of the work.

Of course there are text-book lessons with recitations and lectures at regular times, but the laboratory method is the backbone of the course, and without it not a tithe of the results could be attained.

The lectures embrace some branches of physiology and comparative anatomy not covered by the text, as well as a short course in reproduction and embryology—the latter hardly more than an outline owing to lack of time. Hygiene is taught, not as a separate subject but whenever and wherever it can be most effectively presented. In this connection the effects of alcohol and



CLASS IN ZOOLOGY.

studies just mentioned. At the outset he is supplied with the human skeleton, both complete and dismembered, and is required to study, draw, name and describe the various parts and their relations to each other in such a way as to fix these structures indelibly on his mind, so that his own skeleton, so to speak, is made the actual foundation of that anatomical knowledge which he is to apply later to the worm, the insect, the fish, the bird, or the horse. The next step is a similar study of the other tissues of the body—cartilage, ligaments, tendons, blood, muscles, fat, nerves and skin. These are illustrated not simply with pictures, models, diagrams and preserved specimens, but with the actual tissues from frogs, fish, birds, and slaughter house material, each student handling, examining, drawing and testing the various parts, and so becoming familiar with the normal condition and appearance of the various organs and tissues. In doing this he works sometimes with the unaided eyes and fingers, sometimes with the hand-lens and dissecting forceps, sometimes with the compound microscope and suitable reference books, but always with the instructor at hand to suggest, correct, or confirm, as the case may demand.

Toward the close of the course in anatomy the class is divided into sections as small as possible and supplied with freshly killed and carefully prepared rabbits or cats, and each student spends several

narcotics are treated, and an attempt made to enforce intelligent and wholesome respect for individual and general temperance and for rational temperance methods.

The modern revelations as to the cause of many of our contagious diseases always prove fruitful sources of discussion and interest, and the relations of bacteria, parasites, and other agents in the production and dissemination of disease are explained and illustrated as far as time allows, together with the approved methods of controlling and preventing such outbreaks.

Few people, however well informed they may be otherwise, have any adequate idea of the number and importance of the insects which may be found in our own vicinity. While the plant species of the state are numbered by hundreds, our insect species are numbered by thousands and tens of thousands, and their individual abundance and importance may be imperfectly realized when we remember the myriads of fleas, flies, mosquitoes and gnats, or the devastating hordes of hessian flies, army-worms and grasshoppers, which make life miserable and agriculture a burden. Again most men are entirely ignorant of the fact that there are hundreds—probably thousands—of species of useful insects, that in fact one of the main restrictions of our insect pests is in the form of parasites belonging to their own class which prey upon these dangerous foes.

The immense number of species,

together with the minute size of many of them has always been a stumbling block to their study in the lower schools, and even in the high schools and many colleges. But their importance to the agriculturist has always been recognized by the Agricultural College, and the value of such study as is offered here can hardly be overestimated. Here, as in the anatomy which preceded it, the laboratory method is the key to the problem, and the student who at the beginning of the Spring term sits down with needle and lens, pencil, paper and grasshopper, for a few hours of serious study on a single species, after a few weeks may be able to name at sight the order to which any common insect belongs, and with a little care and patience to analyze and classify it with a confidence and precision equal to that of the chemist or assayer. Each member of the class gathers, preserves and labels a collection representing six or eight orders of insects, and often becomes so interested in the work as to continue collecting as long as he remains in college. The department has by far the largest and best collection of insects in the state, and the library is rich in general and special works relating to American entomology, so that investigation in this line is limited only by the student's own inclination and the necessity for work in other departments.

The regular agricultural junior, electing horticulture has a second term's work in entomology, devoting most of his time to the insects which affect the Michigan fruit grower, and studying particularly the life histories of the more injurious species and the best methods of preventing or meeting their attacks. As a senior he may elect still another term of advanced work along this line and thus should obtain before graduation a fair working knowledge of the science.

Zoology, or the biology of animals, does not at present receive the attention at the College which its importance would seem to warrant. Some of it is given indeed under other names, for example in the entomology just mentioned, but as a regular study it is confined to the senior year where a single term of so-called economic zoology is provided for those who elect it and are prepared to take it. As with the other subjects taught in this department a large amount of laboratory work is required and although a course of lectures is given in connection with this work no student is allowed to take the lectures alone and receive any credit for it. An attempt is made to give a rough outline of the natural classification of the animal kingdom, but the greater part of the time is spent upon matters of economic importance, and groups like the parasitic worms are treated in some detail. The vertebrate animals of the state, the fish, reptiles, birds and mammals, receive considerable attention, and the inter-relations of some of the groups, for example birds and insects, are used to stimulate the reasoning powers of the students and to teach caution in jumping to conclusions. It is much to be deplored that more than one half of the rural population of the state lives and dies in almost total ignorance of the real beauties and uses of the common wild inhabitants of forest, field and stream, and in too many cases not only misses the true but believes the false and clings tenaciously to the beliefs and super-

stitutions of past generations. To such all snakes are venomous, all toads poisonous; hawks and owls are all equally harmful because some kill chickens, and all woodpeckers are sap-suckers since a single species sometimes injures trees. The king-bird must be shot for eating bees, but the crow may be protected because he devours insects; the martin and swallow must not be allowed to nest on the house lest they bring bed bugs, but rats and mice (which actually do bring trichina to the hogs and very possibly typhoid fever through the well water) are left undisturbed or at best but spasmodically hunted. These and a thousand similar errors and half-truths can be eradicated only by careful and intelligent study and practical, palpable proof. Toward this the department has made a beginning, believing that a few typical cases carefully worked out and thoroughly proved, will do much to break down ignorant prejudice, and substitute positive knowledge for mere tradition or even sheer guess work.

In connection with this work the department fosters a Natural History Society which meets twice each month, and also maintains a large and valuable Museum containing specimens of almost all the larger mammals and birds of the state, together with good collections of fish and reptiles, and thousands of specimens of shells and other invertebrates.

GEOLOGY.

A knowledge of the physical, chemical, and mineral composition of the earth's crust is indispensable to scientific agriculture and this requisite is supplied as far as may be in a single term of elective work in the senior year. As the only available time is during the winter term, little out-door work is practicable, but the class is given almost daily practice in handling specimens of minerals, rocks and fossils, and the various processes of soil formation are fully discussed and illustrated. The coal, iron, copper, salt, gypsum, and marl deposits of the state also receive a fair share of attention, with briefer mention of sands, clays, road-materials, building-stones, etc. The influence of geological formation on the water supply, both surface and artesian, is also noticed. Owing to the brevity of the course and the fact that most of the students have had no previous training in physical geography or mineralogy the work is chiefly along structural dynamical lines and only a sketch of historical geology is attempted. The department is well supplied with specimens, charts and photographs, and the stereopticon is freely used.

WALTER B. BARROWS.

Bacteriology and Hygiene.

BACTERIOLOGY AND HYGIENE.

Whatever the subject may be—that subject has in it cultural and mental training, if it is properly taught or interpreted. Whether it is the logic of mathematics, of language or the operative conduct of some agricultural duty makes little difference. Every experience, if permitted, will perform its share whether within the college walls or without, for it is the totality of the varied experiences which leads to cultural effect. College training consists in depicting before the student's mind those features of the

varied fields of learning systematically and comprehensively, which he may subjectively and objectively employ in his own way, culturally or mentally, to formulate and shape his life's habits and career. The broader his range of study the greater must be the number of his experiences or aids which he may call to his assistance. Yet in this short life-time of ours, it can scarcely be expected that we shall do nothing but study to increase our mental horizon, for it has come to be understood that every man or woman must do something, must be a producer, must have a vocation, otherwise he or she will appear in the role of a parasite fed by the life-blood of its host, an entity with non-entity functions, perhaps a society factor but a social scourge. Consequently only those subjects are chosen for cultural and mental training which will bear directly on the end sought. Thus, if a student intended to follow metaphysics, he would not spend his time with pure-

knowledge of the principles involved and of their application, and that practice is incompetent unless these principles easily run to an issue.

When the study of a typical micro-organism is underway, while there may be no direct application for this single case, it nevertheless teaches the student what laws of life control the development and multiplication of this micro-organism. This leads to questions which arise concerning the growth of bacteria in the dairy, where micro-organisms are so numerous, where they work both for evil and for good; in the soil, where they serve as reducers of organic matter into simpler forms available to plants, where they serve as accumulators of that most valuable element, nitrogen, in conjunction with certain plants; in the body where they frequently give rise to those drastic disorders called infectious and contagious diseases; in water and sewerage, where in one way and another they succeed in causing trouble in man and animals;



ly mechanical studies, although the cultural and mental training is equal in each case. He selects such studies as will help him in his future calling because of their corollated relation, and thus he combines with the cultural and mental discipline the utilitarian. By this choice he has gained his purpose. Another selection might have been more desirable from the cultural standpoint, still most men are obliged to seek that which will earn them a competence and are from circumstances forced to place all which does not aid them directly as secondary.

In this manner the writer looks upon the study of Bacteriology and Hygiene in connection with agriculture. These subjects have the training value as well as other subjects but they are taught with the utilitarian idea in mind; in other words, they are two sciences with which agriculture is intimately associated. They cannot substitute for others but are distinct branches of the tree of agricultural science.

No desire exists to create specialists in the courses offered in this department, the purpose is to give thorough training in those topics which may be required to understand the phenomena of nature and which may be of immediate application in the numerous divisions of agriculture. Instead of placing stress upon each subject of practical import, those principles which control every application are dwelt upon until sufficiently thoroughly established in mind, together with sound judgment, that the application in any phase of practical life may be easily made. This is based upon the belief that competent practice is the result of a competent

in various fermentations as cider, in putrefaction as meat, where they act according to the will of man in creating products for his use, or against the will of man in giving rise to poisons found in food substances—I repeat, this leads to those questions of intrinsic worth, and some of them are answered with the study of each typical germ or micro-organism examined. Connected with each of the above phases, cursorily mentioned, and many others unmentioned, occur many and complicated special problems which require individual attention and which will yield only to the most exacting work and investigations by means of difficult methods. Taking the study of the changes wrought by micro-organisms together with the development and life-habits, the significance of this science becomes great and its extent is far reaching; so broad is it that it dominates many of the practices found in agriculture. Modern hygiene and sanitation and modern dairying are, perhaps it is not saying too much, dependent upon the dictates of micro organisms and in no small degree do these same living cells influence the condition of the soil, of plant-life (through the soil in producing food, through the nodules of the leguminosae in accumulating nitrogen, through bacterial plant diseases) and other departments of practical agricultural pursuits.

Laboratory training in Bacteriology, if only conducted from the theoretical standpoint would have its practical value, in that every movement must be so gauged as to eliminate contamination and every act must be so precise as to attain the

object in view. Moreover this laboratory training is practical in that it is able to teach how to manipulate micro-organisms and to control them in their constant relations to mankind. Sterilization, pasteurization, disinfection, and other applicable spheres of action are given a concrete significance. The advantage of seeing these invisible cells in their conduct cannot be over estimated, for then they become as real as larger life-forms. Then too a study of the changes they produce in substances, as sugar into alcohol, and alcohol into acetic acid, and the conditions upon which these changes depend must be as highly useful as to study the changes produced in the human body and the conditions upon which these changes depend.

Although Bacteriology has spread out to vast dimensions within the last twenty years since it has been studied as an established science, and there are specialists in every one of its branches as in other sciences yet in the time the student has an opportunity to study it, a very good working knowledge may be acquired.

The study of Hygiene is vital to every agricultural student in its bearing upon the rural home and stock management. So well established are many of the principles of Hygiene that an exposition of them in their briefest form is not necessary. An ignorance of them or an indifference to them frequently results in the loss of life in the home and financial loss among the stock.

It is easy to make a mechanical device out of the human frame in which there is no knowledge of the principles necessary for intelligent operation, and it is possible to so train the human mind in the operative principles of life as to render this human machine subservient to these principles through the mind.

C. E. MARSHALL.

Physics.

Students in the agricultural course pursue the study of physics for one year. The instruction is given both in lecture room and laboratory. There may be said to be two main objects of the training: first to equip the student with such working knowledge of physical facts as may be used by him in his life work: such, for example, as electrical laws, laws of machines, etc. This aim seems to us the minor one. Of far more value to the student and the state is the other aim which is to inspire a love of truth and honesty for their own sake; not because there may be "policy" in being honest or truthful. I cannot better indicate this aim than by quoting from an address given by Prof. H. N. Rowland, recently deceased, whose life and work have done much to give Johns Hopkins University its standing and reputation. Speaking of the aim of science teaching he said—"First and last, the scientific standard must be upheld for the university man, be he a student of letters, be he a physicist; and that standard is the absolute truth, the ultimate truth. 'Nothing imperfect is the measure of anything.' ***** 'But for myself, I value in a scientific mind most of all that love of truth, that care in its pursuit, and that humility of mind which makes the possibility of error always present more than any other quality. This is the mind which has built up modern science. ***** This is the mind which is destined to govern the world in the future and to solve

problems pertaining to politics and humanity as well as to inanimate nature.*** It is the only mind that values the truth as it should be valued and ignores all personal feeling in its pursuit. And this is the mind the physical laboratory is built to cultivate."

However full the ranks of any trade or profession may be, there is always room for the honest, persevering, humble minded citizen. To aid in the training of such citizens is the chiefest function, it seems to me, of the subject of physics in the agricultural course.

M. D. A.

History and Economics.

The social sciences of which history, civics and economics are members have had more important places given them in college curriculums in recent years through their essential usefulness.

The closer unifying of society during the past half century through improved means of transportation and communication, the increased interdependence of human beings upon each other through excessive specialization of industry have made it as interesting as it is valuable to study the conditions of social welfare.

The beginning of this sort of study in the agricultural course is through English history where the development of our social order is intentionally emphasized.

Throughout another term study of the governmental apparatus and methods of this country is carried on together with a brief survey of general political science.

In addition to these required subjects two full term electives are offered in this course—economics and advanced United States history. This last subject as is implied in the name is a somewhat exhaustive study of our growth as a people beginning with the separation from the mother country through the revolutionary war. The guiding thread through this study is our political development but social, economic and literary interests are not neglected.

Analysis and explanation of the general ways by which human beings made their livings under modern conditions are the chief parts of economic study. Added to this is a description of the mechanism of modern industrial society and some consideration of its problems. Perhaps no single aim is more consistently kept in view throughout the whole of this work than to develop in the student social consciousness—to put him intelligently in touch with modern civilization.

WILBUR O. HEDRICK.

Botany.

Thirty-five years ago all the students at M. A. C. were taught more botany than was taught any undergraduates at any of the Universities or larger Colleges in this country. Since that time many changes have been made, till now the agricultural students of this College spend over two years in daily work in the study of botany, if we count the forestry.

The teachers of the botany placed in the agricultural course believe that the subjects should be different in some respects from those usually found in courses offered by the Universities. We aim to cater to the

wants of young men who are liable to be farmers, fruit growers, gardeners or workers in experiment stations. For such persons we believe that the study of some other portions of botany are of more importance than a knowledge of sea weeds, diatoms, pond scums, lichens, liverworts, mosses and most of the toadstools found in old logs in the woods.

No extended time is devoted to learning all the details regarding the multiplication and growth of cells, though this subject receives some attention.

From start to finish one feature is made prominent. All students must study good specimens of plants or parts of plants, merely referring to books. The laboratory method prevails, whether the students are growing and studying seedlings of peas, beans, corn or buckwheat, the buds and twigs of trees and shrubs, the morphology of the different parts of flowers, in every case an abundance of fresh or well preserved



CLASS IN CHEMISTRY

materials is supplied.

For one term the students sit two hours a day, each provided with a compound microscope at his table learning the structure of roots, leaves, and other parts of the higher plants. In like manner each works a term studying rusts, musts, apple scab, black knot of plums, blights and mildews, growing the spores, making drawings and notes and reading different books and bulletins that are up to date. Practice in identifying plants is sufficient to give any person a start that he can soon learn to perform the work by himself.

They study somewhat critically, grasses, other forage plants and weeds; trees and shrubs are studied with reference to their uses for timber ornamenting a home or park. Experiments in plant physiology with apparatus in hand is taken by a portion of the students.

Ecology, or the way plants are adapted to each other, and other conditions and surroundings occupies much of one term and includes what some now call nature study. Students prepare themselves to take an active part in weekly meetings of the Botanical Club, make frequent

(Continued on Page 8.)

Miss Paddock has completed her thesis. She isolated six mold fungi and six bacteria from spoiled canned fruit. The object of the experiment was to determine the thermal death point in order to show whether the spoiling of the fruit was due to a carelessness in canning or to heat—

resistant forms of micro-organisms. She found that all but two were killed at comparatively low temperatures. These two were killed at 100 degrees centigrade. The whole experiment would go to prove that in the majority of cases spoiling is due to carelessness in canning.

Some Remarks on Tuskegee.

[At our request, Mr. Warren has hastily jotted down for us these remarks on Tuskegee, which, we know, will be of much interest to all our readers. Ed.]

There are several interesting contrasts that might be drawn between Tuskegee and M. A. C. In the first place Tuskegee will not boast of equality with M. A. C. in its capacity for educational work. Tuskegee is like a great big boy who has developed so rapidly as to outgrow his clothes.

New buildings are constantly being erected; new territory constantly cleared and cultivated. Development is continued all along

of deportment are interesting; the methods of conducting the labor system; the care of the dormitories, and the societies, all present interesting features such as you are not apt to read in any magazine.

The work of the institution is indeed far reaching. Character as well as knowledge is fostered by the institution and the aim is to send out men who will be leaders among the men of their own race. They shall be men and women strong mentally, physically and morally, placing the emphasis on the morals. Tuskegee stands as a living monument to the untiring, unceasing worthy founder and principal, of whom the country north and south is proud.

Students at the Pan-American.

PROF. J. L. SNYDER,

Agricultural College, Mich.,

Dear Sir:—I am in receipt of a number of letters asking what, if any arrangements can be made whereby agricultural students can attend the Exposition, and if possible secure a position, or at least be kept during their visit to the Exposition for a nominal sum. Having more than an ordinary interest in this matter, I beg to say that the Exposition Company has provided headquarters on the grounds for the grange and farmers generally. The Grange officials have arranged with the Keese Information Company to provide for visitors at nominal prices, ranging from 50c for lodging, and 25c and upwards for meals. They have also made arrangements to provide a camp for the use of students and parties who would like to visit the Exposition. The camp accommodates 100 or more persons. It is particularly adapted to the uses of college students, quite a number of whom are already arranging for a visit to the Exposition, and also to secure good accommodations of this kind. Being anxious to have all of the students of agriculture avail themselves of the opportunities of the Exposition to compare the agriculture of the different states, countries and provinces, I am prompted to write you this letter, which I trust you will bring to the attention of the students, in order that they may avail themselves of the arrangements made by the Grange, should they care to do so. Any arrangement should be made with the Keese Information Company, 72 Exchange street, Buffalo, N. Y.

In closing it may not be amiss for me to call your particular attention to the fact that never has an Exposition paid as much attention to dairy, agricultural and live stock interests, as has the Pan-American Exposition. Each of these departments most interesting to students of agricultural colleges has been worked up, and the exhibits will be complete in every particular, affording every facility for the student to make such notes, comparisons and studies as he may see fit. Should any of your students visit the Exposition, I should be personally pleased to meet them, and extend to them any courtesy that I may be able.

Thanking you in advance for bringing this matter to the attention of your students, I remain,

Very truly yours,
F. A. CONVERSE.

The Chemical Laboratory has just received and installed a very serviceable muffle furnace heated by gasoline under pressure.

Intercollegiate Field Day.

Continued from Page 1.

The total number of points were distributed as below.

SUMMARY OF POINTS.

| TRACK EVENTS. | Albion. | Hillsdale. | Kalamazoo. | M. A. C. | Normal. | Olivet. |
|----------------------|---------|------------|------------|----------|---------|---------|
| 100 yards..... | 3 | 1 | 5 | --- | --- | --- |
| 220 "..... | 1 | 1 | 3 | --- | --- | --- |
| 440 "..... | 5 | 1 | 3 | --- | --- | --- |
| 880 "..... | 6 | --- | 3 | --- | --- | --- |
| Mile run..... | 1 | 3 | 5 | --- | --- | --- |
| Mile walk..... | --- | --- | --- | 5 | 1 | 1 |
| 120 hurdle..... | 4 | 5 | --- | --- | --- | --- |
| 220 hurdle..... | 3 | 5 | --- | 1 | --- | --- |
| 1-Mile bike..... | --- | 1 | --- | 5 | 3 | --- |
| Mile bike..... | --- | --- | --- | 8 | --- | 1 |
| 5-Mile bike..... | --- | --- | --- | 4 | --- | 5 |
| Stand. bd. jump..... | 1 | --- | --- | 8 | --- | --- |
| Run. bd. jump..... | 3 | --- | --- | 6 | --- | --- |
| Hop, step, jump..... | 3 | 1 | --- | 5 | --- | --- |
| Run. high jump..... | --- | --- | --- | 8 | 1 | --- |
| Pole vault..... | 3 | --- | --- | 6 | --- | --- |
| Shot..... | 5 | 1 | --- | 3 | --- | --- |
| Hammer..... | 3 | 1 | --- | 5 | --- | --- |
| High kick..... | --- | --- | --- | 4 | --- | 5 |
| Total..... | 29 | 29 | 8 | 75 | 17 | 12 |
| INDOOR MEET. | | | | | | |
| Wrestling: | | | | | | |
| Featherweight..... | --- | --- | --- | 5 | 3 | --- |
| Lightweight..... | --- | --- | --- | 5 | 3 | --- |
| Welterweight..... | 5 | --- | --- | 3 | --- | --- |
| Middleweight..... | 5 | --- | --- | 3 | --- | --- |
| Heavyweight..... | 5 | --- | --- | 3 | --- | --- |
| Club swinging..... | --- | --- | --- | 5 | 3 | --- |
| Horizontal bar..... | --- | --- | --- | 8 | --- | --- |
| Total..... | 15 | --- | --- | 21 | 20 | --- |
| TENNIS. | | | | | | |
| Men's doubles..... | 5 | 1 | --- | 3 | --- | --- |
| Men's singles..... | 5 | --- | 1 | 3 | --- | --- |
| Ladies' doubles..... | 5 | 3 | --- | 1 | --- | --- |
| Ladies' singles..... | 5 | 3 | --- | --- | --- | --- |
| Total..... | 20 | 7 | 1 | 7 | --- | --- |
| Grand Total..... | 64 | 36 | 9 | 103 | 37 | 12 |

M. A. C., 103; Albion, 64; Normals, 37; Hillsdale, 36; Olivet, 12; Hillsdale, 9. Three records only were broken, owing to the cold day and strong wind on Friday, the 120 hurdles in 17 sec. by DePew. Hillsdale was one-fifth second lower than the record, but it did not stand as he kicked down two hurdles at the finish.

DePew broke the 220 hurdle record in 26 four-fifths secs. which is one-fifth sec. better.

The hammer was thrown 113½ feet by Edmunds of Ypsilanti, breaking the record by 18 feet.

These three records were all made on Saturday when it turned off somewhat warmer and this out of a total of only six events run off that day. As the result of Friday morning M. A. C. had 26 points and Hillsdale second with 13. At supper time M. A. C. had 64 points on track work and Hillsdale second, 17. Albion was 16.

BASE BALL.

On Friday afternoon Olivet and Albion played a most interesting game, with Olivet the general favorite and in the lead by 5 to 2 up to the ninth inning, when Albion made a Detroit finish by piling up four runs, thus winning by 6 to 5.

The final game between Ypsilanti and Albion came off Saturday afternoon after the relay race. Albion came to the bat first, and by good batting and a grand ascension on the part of the Normals, rolled in eleven runs in the first inning to the wild

delight of Albion's rooters. Barring the first, the game was a good one to look at, but the enthusiasm of the cheerers for Ypsilanti had received a setback from which they only at intervals recovered. The game was finished by a score of 16 to 5, with Albion again the winner, making the second year of base ball victory for the Brackett cup.

C. O. BEMIES.

About the Campus.

Miss Keller lectured Wednesday, on "Fra Angelico," before the class in the History of Art.

Mr. A. H. Taylor, has completed his translation from the French of Tissinsh's new treatise of Optics.

Mrs. O. R. Baldwin of Detroit, who was visiting her son, Russell H. Baldwin, '04, returned home last Tuesday.

Prof. J. J. Ferguson addressed the West Salem Farmers' Club, Wednesday afternoon, on "Opportunities in the Live Stock Business."

Prof. Wheeler addressed the Michigan Pioneer Society at its annual convention in the Senate Chamber, State Capitol, Wednesday evening, on "The Early Flora and Fauna of Michigan."

E. M. Shelton, '71, president and treasurer of the Provident Security and Trust Company, 116 Marion street, Seattle, Wash., was formerly prominently connected with various Agricultural colleges in this country, Japan and Australia. He returned to the United States about three years ago. In writing to Dr. Beal under date of May 30, he alludes to his present work as follows: "Since landing on these shores I have joined the great American dollar hunt and this at the present occupies me to the exclusion of all those matters even in which I am very much more interested. I am worked now night and day, but am pleased to be able to say that this work is not without financial results."

Prof. C. D. Smith delivered an address at Syracuse, N. Y., before the American Association of Hol-

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NORTON'S HARDWARE.

stein-Frisian Breeders, on the "Relation of Feeding to Form and Performance," Wednesday, June 5.

Dr. Beal, Professor Wheeler, Mr. Longyear and a number of stu-

dents went on a botanizing expedition to the Chandler farm, Saturday. A number of students especially interested in forestry, accompanied the expedition.

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C. D. WOODBURY, HOLLISTER BLOCK:

Botany.

[Continued from Page 6.]

invasions in the neighborhood, visit the orchards, fields and gardens, the woods, the arboretum and the botanic garden, often accompanied by a teacher to observe and study definite topics with the view to reporting the results in the class room.

Botany is better taught each succeeding year, as new methods and new discoveries make it possible. No science is making greater progress than botany.

W. J. B.

Mathematics and Civil Engineering.

The course in mathematics for students in agriculture is as follows:

The first term of the Freshman year is devoted to the elementary operations of algebra, the subjects of factoring, lowest common multiple, highest common divisor, fractions, powers and roots, equations containing one or more unknown quantities.

In the second term of the Freshman year are given the subjects, harder factors, indices, surds, quadratic equations, ratio and proportion, progressions, and logarithms.

Instruction is given in plane and solid geometry. The courses extend over the third term of the Freshman year and the first term of the Sophomore year. The effort will not be so much toward covering a given amount of ground as toward developing, on the part of the student, the power of independent reasoning.

Plane Trigonometry is given in the third term of the Sophomore year. The ratio system is used exclusively, and much attention is given to the practical applications of the plane trigonometry. Land surveying is studied in the same term. The first study of surveying required of agricultural students, is a short course given in the third term of the Sophomore year, in which is presented as much of the simpler operations of line and angular measurement as can be crowded into two hours per week of meeting in the class room, and two hours per week in the field. A text-book is used, but the larger part of class instruction is by lectures.

In the field work a series of problems (practical ones, not useless geometric curiosities) are solved, and the student "learns to do by doing." The ground covered is indicated by the final test required of each member of the class, *i. e.*, field notes, and a map of an irregular tract, from personal survey, which must "close" within specified limits.

The principles of leveling receive some attention in this course, but there is not time for much practice. Those who complete the course generally know how to make with accuracy ordinary farm surveys for area, drainage, etc.

In the fall term of the Senior year, agricultural students may elect a course in advanced surveying, in which particular attention is given to methods employed in government land subdivision, grading drainage, and computation of simple problems in earthwork. This course is essentially a study of surveying methods, in which all necessary refinements and cautions for avoiding error are taken into account. Considerable notice is taken of the application of the

methods studied to city, topographical and railroad surveying.

Another elective course, given in the winter term treats principally of systems of drainage, construction and improvement of highways and ordinary highway bridges. This course must be preceded by all the courses outlined above.

H. K. VEDDER.

Drawing.

It is now a well recognized fact that some training in drawing is a necessary part of the training of the well equipped scientist. The one who has the ability to illustrate his notes, or to enforce a point by a timely sketch, finds it very useful, while the one who has it not never ceases to regret the lack of it.

In the study of many of the natural sciences drawing has been found to be of great service in training and developing the faculty of observation and strengthening the power of concentration.

Realizing these facts all of the science schools either have drawing as an entrance requirement or place it in the curriculum among the first studies. Free-hand drawing has been a required study in the Freshman year of the April course for something like twenty years. The work extends through the winter term, a period of two hours each day. The aim is to give a sound basis for future work and make the training as practical as possible. We draw from objects from the first, trying to work out and understand the elements of perspective. It is really a training in seeing and making a simple graphic representation in line of what one sees.

As our men so often go into lines of work where a knowledge of processes in making drawings in various mediums for graphic reproduction and a knowledge of engraving processes would be very convenient there is a demand for elective work in the junior or senior year of a nature similar to that given the Junior girls to graphic arts, only of a more technical character. It is contemplated introducing this into the course.

W. S. HOLDSWORTH.

Veterinary Science.

The object of this department, in connection with the Agricultural Course, is to give to those young men who expect to return to the farm, or who expect to be associated with animals, a general idea of the anatomy and physiology of the domesticated animals; also of the diseases which affect these animals, and their treatment. The sophomores receive thirty lectures which deal principally with the more common diseases; their causes, symptoms and treatment. The importance of prevention is emphasized.

The course for the seniors is elective, and extends throughout the year. The object of the course is not to produce finished veterinarians, but rather equip the young men for a more intelligent handling of the animals in order to prevent disease; for a quicker recognition of disease; to give rational treatment in case of many of the minor disorders and to act as intelligent nurses in all cases of disease. An endeavor is made to make the course as practical as possible for the young men who look forward to becoming practical agriculturists.

G. A. W.

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