

Prof. Davis Will Resign.

We are soon to lose the services of G. C. Davis, '89, who, since graduation, has been instructor in zoology and who, two years ago, was appointed consulting zoologist to the experiment station.

Mr. Davis is compelled to give up his work here because of the delicate health of Mrs. Davis. For two years Mr. and Mrs. Davis have spent their winters in California, and the climate there agrees with her so well that they have decided to make their permanent residence in that state. Mrs. Davis is now at Redlands, Cal., and Mr. Davis will join her there about the middle of December.

In the departure of Mr. Davis the College loses a hard worker and a valuable man in scientific research.

Y. M. and Y. W. C. A. Entertainment.

The Y. W. C. A. and Y. M. C. A. united in giving a pleasant little entertainment last Friday evening in the Y. M. C. A. parlors. After an opening hymn and prayer the following program was presented:

Original poem, J. D. McLouth; song, by the double quartet; recitation, "Just Before Christmas," Miss Bristol; "The Concensus of the Competents," Misses Chase, Phelps and Monroe; recitation, "What the Old Man Said," Mr. Hunt; song, "Steal Away," by the double quartet.

After the program the guests indulged in a free-hand drawing contest, old-fashioned spelling school, and various other games until ten o'clock. It is the aim of these two associations to give an entertainment of this sort every three or four weeks.

Late Autumn Flowers.

On November 3, day of general election, the following twenty-seven hardy plants were found in blossom at the college. Still others could have been found had it seemed worth while to leave the top uncut of most of the plants in the botanic garden. Aubretia (purple), Brook cress, cinque-foil (silvery), clover (white), clover (red), chickweed (common), chickweed (thyme-leaved), dandelion (common), dandelion (fall), mallow (common), May-weed, mustard (hedge), penny cress, phlox (moss pink), pepper grass (wild), Shepherd's purse, spear-grass, Speedwell (Buxbaum's), Speedwell (neckweed), Speedwell (thyme-leaved), tall buttercup, tansy (common), tansy (Huron), violet (Canadian), violet (common blue), violet (blue variety), violet (pale). There are no doubt along the streams and in the woods and swamps three to ten others.

Botanical Club.

At the regular meeting last Friday evening the club adopted the plan of members responding to their names with a quotation, sentiment or observation. The first subject on the program was presented by Mr. Thomas Durkin, of the horticultural department, who related some of his experiences while connected a number of years ago with the nursery establishment of the late Wm. Parry, of New Jersey. He described in particular the

circumstances of the introduction by Mr. Parry of the Wilson Jr. blackberry, the Wonderful peach and the Kieffer pear, from the last of which he made a profit of \$40,000. Mr. Durkin stated that each of these fruits was of accidental origin and that most of our improved fruits had originated in that manner. The few persons who were engaged in improving our fruits, however, had very encouraging results. As an instance of this he stated that the originator of the Jessie strawberry was offered \$2,000 for a single plant. The horticultural department of the college has been doing some work along this line, and this fall planted seeds of Northern Spy, Chenango Strawberry, Seek-no-Further and other choice varieties of the apple.

Mr. Skeels gave a talk on the flora of Delevan Lake, Wisconsin, an interesting summer resort where he was employed last summer. The talk was illustrated by a sketch of the lake and by specimens from the college herbarium. A notable feature of the flora of that locality is the absence of many of the best known flowers of our own states and the presence of numerous species from the prairie regions farther west. The trilliums hepaticas and yellow erythronium were particularly missed, while *amorpha canescens*, *bouteloua racemosa* and other curious western forms were encountered. President Gunson exhibited a specimen of *aristolochia* or Dutchman's pipe, a very interesting flower, which can now be seen at the greenhouse.

Co-operative Associations.

PROF. W. O. HEDRICK.

The renewed disposition toward organizing a co-operative association at the College suggests that some description of these enterprises might be useful in understanding them or in determining their feasibility at this place.

The object of such organizations is nearly always to do away with the profits of a middleman. They enable the purchaser to deal directly with the producer, thus exempting him from the charges for handling, risk, and interest made by the retail dealer.

Philosophically, these concerns are a product of altruism—the belief that in the spirit of common helpfulness between man and man society is best organized, and that in human interdependence, not in human selfishness the highest good of all is obtained. Most notable examples of co-operative outgrowths are the Brook Farm experiment of Hawthorn, Ripley and Curtiss and the French workshop schemes of 1849. Of less conspicuous instances of co-operative shops or stores this spirit has been prolific throughout our own country, many hundreds having been founded within the past half century.

Nearly always this co-operative disposition takes one of two forms. If employed to operate factories, farms, etc., it is called productive co-operation. When used merely to form co-operative stores or purchasing agencies it is called distributive co-operation. The machinery required for this latter form is extremely simple. When reduced to actual necessities, it consists of an agent hired by the persons desiring to form the union for the

cheaper satisfaction of their wants, who endeavors to collect those wants and to satisfy them. More usually, however, a company, is formed in which each co-operator becomes a shareholder. A board of directors is elected to supervise the business, and an agent is employed by them. The members of such an organization secure the commodities co-operated upon at cost; others who are not members can secure the same articles usually at market price. Profits are sometimes made from this last feature of the business which are divided among the co-operators, or used to defray the expenses of the business.

The success of these undertakings has depended always upon the feeling of unity among their members. They require a social consciousness and sympathy not always found in competitive society. As Washington Gladden declares: "Men cannot co-operate successfully for any purpose if the sole bond between them is self-interest." They are of the same spirit as the union of men for educational or religious purposes, differing only in having a different purpose. Some of the axioms of co-operation are the following:

Experience has shown that an absolute cash system of doing business is necessary.

The fewer things co-operated upon and the greater the number of co-operators enhances directly the chances of success. An elaborate business requires such a skillful agent that the savings of the business are encroached upon by his salary.

Inexpensive management is necessary, and the shareholder must confine his purchases, when possible, to the co-operative organization.

The active interest of every shareholder is required by the organization as an essential to its success.

The principle of co-operation is a sound one. It is applied successfully to savings banks, building and loan associations and to many forms of insurance. Its opportunities, whether moral, social or economical, seem in every way to merit promotion.

Department of History and Political Economy.

The Farm Fields.

The College farm extends north and south nearly a mile and a half. Through the center for nearly its entire length is a well-graded lane, with shade trees on either side. On each side of the lane, beginning at the north, where the College buildings are, lie the fields, which are numbered in succession like lots in a city, the even numbers on the right, or west side, and the odd numbers on the left. These fields are intended to contain twenty acres each, unless prevented by the course of the railroads or the river. North of the river the outlines of the fields are obscured by the horticultural grounds, experimental plots, campus and barnyards. South of the river the fields proper begin, with number six on the right and number seven on the left, the numbering increasing southward to the last, which are number eighteen, on the right, and number nineteen on the left. All these fields are now under cultivation, except the last two on the left, numbers seven-

teen and nineteen, one of which is reserved for a permanent, the other a temporary woodlot. Number eighteen has recently been cleared of its timber, a portion of it only having been in cultivated crops for the past two years, and the remainder having this fall been seeded down for pasture. On this part the students have just finished picking up the logs and brush. East and west of the numbered fields, extending for a mile and a half up and down the river, is additional land belonging to the farm, the western portion forming the part of the campus toward the main entrance, and the eastern part forming another woodlot along the south side of the river east of number seven. At the extreme eastern point of this woodland, and separated from the main portion by a highway, is a three-acre plantation of young white pines, which forms the eastern terminus of the farm. The College farm, therefore, lies in the form of a capital T, with the cultivated fields occupying the stem and the top outlined by the Red Cedar River.

A Ghost Story—How a Young College Professor Paralyzed an Irish Mill Hand.

Prof. U. P. Hedrick, of the O. A. C., has been to Cornucopia, Eastern Oregon, making arrangements for a horticultural survey of that section. The door of his bedroom at the hotel where he stayed at Cornucopia locked with a spring lock, and that is why this story is written. After the professor had retired one night, he suddenly remembered that his valise was outside, and without waiting to change his bed-chamber toilet he rushed out after it. Of course the bedroom door swung to and the spring lock fastened, and so when the professor returned he couldn't enter.

Now the hotel was kept by ladies, and for obvious reasons Prof. Hedrick couldn't awaken them to be let into his room. But he set about to hunt a man to help him out of the difficulty. The hour was late, a cold rain was falling, and the mud was deep. Little streams of mud and water squirted up through the professor's pink toes and the chill wind fluttered the tails of his chimmissette, but no male man was to be seen or to be found. For a long time the search went silently on, when finally from a big stamp mill in operation near by came a lantern with an Irishman ahold of it. The professor made for him, and the son of the Emerald isle caught a glimpse of the wind-tossed night shirt. Up raised his lantern with a jerk, and then with a wild whoop the micky dropped his light and fled. "Holy Mother of Moses, it's a spook," he shouted, as he rushed into the quartz mill. "Begorra, it's after me," he yelled, and the wheels of the mill were stopped. The mill men went out to see the ghost, and there in the rain they found the chilly professor. Explanations followed, and on a pallet made by the mill men the professor waited for the morn and the return to him by a friend of his clothing.—

Times, Corvallis, Oregon.

Mother (instructing her little son's devotions): "And now, Willy, pray for Grandma's safety." Willy—"Does she want a bike, too?"—*Ex.*



At the College.

F. M. Nichols, *sp*, has been spending a week at his home.

The freshmen blossomed out in their new uniforms last Friday.

The Eclectic society entertained the coeds last Saturday evening.

About half of the boys exercised the duties of citizenship by going home to vote.

F. W. Robison, '98, spent several days with his brother at Smyrna during election week.

A large number of College people saw Romeo and Juliet at Baird's last Thursday evening.

Lieut. and Mrs. Bandholtz visited at the former's home in Constantine several days of last week.

Senator Morrill, the friend of agricultural colleges, is returned to the senate at the age of 86.

Four promising sophomores are taking a scientific course on "How to run the drag and the cultivator."

Several members of the M. A. C. Grange took part in the program of Capital Grange last Saturday evening.

A. J. Peek, who was elected to the state legislature from Jackson county, has a son in the class of 1900 at M. A. C.

Outdoor work on the horticultural department is about done for the year. The gathering of late cabbage and celery is about all that remains.

Wanted—By Mr. Conway and S. J. Redfern, to know where Eddie Gallup lives in Okemos. Any one giving the desired information will be rewarded.

The washout south of the icehouse has been filled in, and now the farm department is finishing the grade on the last few rods of lane near the D., L. & N. railroad.

W. W. Bailey, of Boyne City, who took the pharmacy examination in Lansing last week, visited his fellow townsman, E. A. Robinson, '97, last Friday afternoon.

G. C. Davis, station entomologist, attended a meeting of the Kent county scientific institute in Grand Rapids last Friday evening, where he read a paper on "Carpet Beetles."

Wanted at M. A. C.—One good large bulletin board, where all notices may be posted, instead of using posts of porches, sidewalks and sundry other places as is done at present.

Prof. Edith McDermott attended the meeting of the Federation of Women's Clubs in Detroit last week, and on Thursday evening read the paper presented on page 4 of this paper.

President Snyder and Prof. and Mrs. Smith left last Friday for Washington, D. C., to attend the annual meeting of the Association of Agricultural Colleges and Experiment Stations. Prof. Smith will read a paper before the college section on "What should be taught in agricultural colleges."

Just as the members of the foot ball team were buying tickets for Alma last Saturday they received a message not to come. They feel a little sore at the treatment they have received at the hands of Kalamazoo and Alma. Kalamazoo has canceled her date for M. A. C. at Kalamazoo, and now Alma, they think, is trying to do the same.

Some queer election bets were made among the students. Because of Bryan's defeat Miss Vaughn loses a week's pie to C. F. Herrmann, and she has to carry the pie over to him from Abbot to Wells Hall. J. A. Elliott, we are told, loses the privilege of shaving until after Christmas, and F. W. Kramer is to black S. J. Redfern's shoes every morning for a month.

It has always been the pride of the students that the squirrels on the campus were so tame, and no student ever thinks of harming one of them. We wish as much might be said of all residents of the College, but a few of the "Faculty kids" seem to delight in making life miserable for these interesting little pets. Last Saturday two boys and two dogs killed two of them. It is about time for some one to begin making it interesting for the dogs.

Early Trees On The Campus.

DR. W. J. BEAL.

Chas. E. Hollister, '61, says that Professor J. C. Holmes, the first professor of horticulture, set out the first evergreens at the College in 1858. These were chiefly Norway spruces, white pines, Austrian and Scotch pines and red cedars. The pines he thinks were brought from Pine Lake by S. L. Kilbourne, now of Lansing, then a student. Many of these trees are still standing, mostly near College Hall, and the dwelling houses occupied by Dr. Kedzie, Dr. Beal, Dr. Edwards and Professor Weil.

Years ago Professor Holmes told the writer that Dr. Thurber, the second professor of horticulture, set the oldest of the other kinds of trees and shrubs, such as the Ginkgo tree, bald cypress, Oriental spruce, Cambrian pine, dwarf pine, Siberian pea tree, pinet, Kentucky coffee trees, the first Japanese quinces, and spiraeas and a number of others which are now probably gone for one reason and another. *Spiraea triloba* is one of our choicest shrubs. The oldest one that the writer is certain about is located about 50 feet nearly east of the east entrance to College Hall and must have been planted about 1861—35 years ago. It has recently been making a new start and spreading out considerably owing to

cultivation in close proximity. If I am correctly informed, Dr. Thurber was the man who started a fruit garden in the form of an L, planting trees of apples, cherries, and others. One point of the L was just west of the present chemical laboratory and from this the rows run due west to a Siberian crab apple tree still standing, and from this south, where a few trees now stand west of the greenhouse and west of the barn at the south.

Botanical Department.

American Association of Farmers' Institute Managers.

KENYON L. BUTTERFIELD.

Last March, at Watertown, Wisconsin, there was formed an International Association of Farmers' Institute Workers, which adjourned to meet in Chicago in October. The adjourned meeting was held Oct. 14 and 15 at the Sherman House, and was attended by representatives from the eleven states of Maryland, Pennsylvania, New York, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Nebraska and Alabama. The sessions had, perhaps, an average attendance of forty. The purpose of the meeting was largely to complete the foundation laid at Watertown, and a large portion of the time of the meeting was taken up with a debate upon the character of the constitution and by-laws. The pervading idea at Watertown seemed to be that the association should be a popular one, and the constitution there adopted provided that any institute worker could become a member; but at the Chicago meeting the idea of several of the strongest superintendents was that the association should be made up of institute directors or superintendents, one for each state represented, with an associate and non-voting membership made up of all institute workers choosing to join. After a protracted debate, led by McKerrow, of Wisconsin, for the broader membership, and Hamilton, of Pennsylvania, for the restricted membership, a constitution and by-laws, framed by the latter, was unanimously adopted as a substitute for the existing constitution, giving the above title to the society. Each state, therefore, has one voting member, who pays an annual fee of \$10; other institute workers can join by paying a fee of \$1.

Many other subjects, however, were discussed besides the important one of the constitution. Superintendent Latta, of Indiana, M. A. C., '77, had a terse and suggestive paper on developing institute workers. Superintendent Miller, of Ohio, explained the workings of the Ohio system. Director Hamilton, of Pennsylvania, read a paper on "How to Make an Institute Interesting." Mrs. Mary A. Mayo, of Michigan, explained the women's work of Michigan institutes, and the subscriber pointed out some of the rocks and shoals of institute work. All these questions were well discussed. Each director found that other states had advantageous methods and practices. It would be vain to assume that the Michigan plan *in toto* impressed itself upon the meeting as being the ideal one, but I think I am justified in saying that the directors who took pains to inquire about the principles underlying our plan and the details of our management thought that we are on the right track, and that our system is well adapted to Michigan conditions. I think that women's work, as expounded by Mrs. Mayo, made a very deep impression on the meeting. It was, in a large measure, a new idea, and the earnestness of her purpose and the good results accomplished overbalanced any objections that institute

workers may have had to this particular kind of women's work. Michigan was represented by the Board of Agriculture, in addition to Mrs. Mayo and the superintendent.

I believe that this association has a large future before it. It is clearly a fact that institute work when considered as a species of college extension work, and as a part of a broader plan embracing reading courses and regular extension lectures, is but in its infancy. The field for this work is almost boundless, the necessity for it is apparent to every one. The two chief problems are those of building a wise foundation and securing sufficient revenue to bring the work to its best.

Superintendent of Institutes.

Aerial Navigation.

READ BEFORE THE UNION LITERARY SOCIETY BY FRANK V. WARREN, '98.

Until quite recently aerial navigation has been regarded in much the same way as steam locomotion was regarded in earlier times, hence it has made slow progress. The reason for this is that its natural teachers, eminent men of science, have neglected it, very few of them feeling inclined to undergo the amount of personal danger connected with it. Those who have experimented have been men of small scientific knowledge who mostly occupied themselves with air ships in order to make money. But in late years the problem of attaining regular locomotion in air has occupied the attention of a considerable number of engineers, and although as yet very few aerial machines are in use, results have been attained that show that they are practical and all that is required is a little more investigation. When perfected the flying machine is destined to give us greater speed than any other contrivance for the air offers less resistance than water or iron rails. The great difficulty yet to be solved is the power to balance the machine, to utilize currents of air for motive power, and to float and glide along with safety. When this is done we can hope to travel with a velocity of something like 200 miles per hour.

One of the most successful machines yet invented is the Aerodrome, built by Prof. Langley, of the Smithsonian Institute. The machine was of steel and when in the air resembled a large bird soaring with extreme regularity in large curves, sweeping upward in a spiral path until it reaches a height of about 100 feet, it then moved forward in almost a straight line. This machine, instead of having gas to lift it, as in the case of balloons, is 1,000 times heavier than the air on which it has to run, and is sustained in much the same way that thin ice supports a swift skater. The power is derived from a steam engine through means of propellers. Hence the inventor encounters a great difficulty. The machine must be very large in order to carry enough water and fuel to run any great distance. In large machines it may be possible to use a condensing apparatus and use the water over and over. In 1870 experiments were begun to ascertain the form of wing most desirable for flying machines. It has been determined that slightly concave wings having their hollow turned downward like those of a bird and having an arch depth of 1-20 of their width, give the best results, and that a wing moving alternately up and down gives nine times as much lifting power as one moving constantly in the same direction. The starting with such a machine as this is accomplished by running

down a steep hill against the wind and looks like an imperfect imitation of the action of an eagle, by which the bird soars about for hours without moving a wing.

Another very satisfactory apparatus is one invented by Rudolph Kosch. It weighs 56 pounds and has two pairs of wings 6 feet in diameter. Each pair rotates in a horizontal plane, but in different directions, when being operated so that turning the upper pair to the left will cause the lower pair to turn to the right. Both pairs can be flapped down simultaneously while being turned and then they appear in a combined flapping, rotary motion. They can also be set in such a position that the two pairs of wings will appear to act like two propeller screws, one right and the other left handed. The motor power of this machine is operated by a man, who sits in a saddle and turns the crank shaft by means of common bicycle pedals, causing the wings to rotate while they are being flapped up and down by handles arranged higher up on the shaft. When the wings are set like screw blades they will perform a motion similar to that of a forward flying bird, the only difference being that the bird's wings travel up and down and forward while these move up and down and around one center. The flapping action of the wings which was stated before as superior to any other is thus applied in such a combination as to fully realize its advantages at the down stroke and to obtain a considerable lifting effect at the up stroke. After reaching the desired elevation by the screw and flapping action the wings are stopped and set in a horizontal position and driven forward by another pair of propellers of smaller size but higher speed. The wings are circular in shape and resemble bicycle wheels in construction. They are constructed by bending steel tubing cold to the desired circle and over this is drawn the balloon fabric.

As has been said, the success of the experiments with these machines is sufficient to convince us that they are practical and before long we can hope for a machine that will serve as a basis of the fast long distance transportation of the next century.

Life Insurance.

W. G. AMOS, '97m.

Life insurance companies, or old line life companies as they are now called, first became known in the early part of the 16th century. The first company which is known was organized in England by a few wealthy Englishmen who insured one another's lives and sold policies to others.

As life insurance was only in its infancy then, the companies charged very high rates and consequently it was only the wealthy that could afford to buy policies. This led to investigation; and from the experience of the different companies, actuaries' tables or a table of mortality was made. From these all premiums are now figured.

The companies did not grow very rapidly until the nineteenth century, but during this century their growth has been marvelous. Many new companies have been organized in nearly every country in the world and some of the largest are not yet sixty years old.

The largest company in the world, which is an American company, had nearly a billion of insurance written and in force when they issued their last report, and it is still growing very rapidly. The total amount which it re-

ceives each year in premiums and pays to policy holders runs high up in the millions.

There is no business which is growing more rapidly and making its influence felt more in money circles than that of the life insurance companies of today.

Their money is mostly invested in bonds and loaned on first mortgages which can be easily converted into cash. Thus it is plain that with such large resources vested in the hands of a few men, as it is, their power is almost unlimited.

The American companies use the actuaries or combined experience and American experience tables to figure their premiums from. The full or office premium consists of two parts: the pure or net premium and a certain addition thereto called the loading.

The pure or net premium is the actual cost of insuring and consists of two parts: first, the amount used each year to pay claims falling due by deaths; and second, a portion held in reserve to help pay one's own policy when it falls due. For a man at the age of thirty the net premium would be about fifteen dollars.

The loading is an amount which is added to the net amount and is the cost of doing business. It includes all the expenses of the home office, and branch offices, and commissions to agents. Therefore it varies in different companies and the one which procures the largest volume of business at the least cost per thousand may be considered a well managed company.

By investing the funds of the policy holders in interest bearing bonds, etc., the company has a large income from this source, and this along with what may be saved from the loading is returned to the policy holders and is called the "accumulations." Nearly every company has a different plan for returning the accumulations. The principal condition in regard to return of accumulations is that the policy shall have been in force a certain stated length of time. If the insured should die before that time or the policy be allowed to lapse the accumulations are forfeited.

The three principal forms of policies written by the old line life companies are the Ordinary or Straight Life, the Limited Payment Life policy, and the Endowment policy. There are a great many other forms of policies but the companies write more of the above policies than any other forms known.

The Ordinary or Straight Life is a policy on which the insured must continue to pay the premium as long as he lives. The single premium per thousand on this policy is the lowest of the three forms stated above.

A Limited Payment Life policy is what its name signifies. The payment of premiums on it is limited, and when this time has expired the policy is paid for. The premium on this policy is about a third more than on the preceding because it is paid for in a limited length of time.

The endowment policy, sometimes called the investment policy, is also a limited payment, and the premiums on it are the highest. At the end of a time stated in the policy, payments cease, and the face of the policy falls due with whatever accumulations there may be at that time. It combines investment with insurance, and is a very good form of policy when taken with a first-class company.

All these policies have a great many features in common, but nearly every company has some distinguishing feature in its contracts. Most companies

have a number of restrictions or conditions as to travel, occupation, residence, etc., while a few companies have comparatively no conditions whatever. It can readily be seen that the policy which has the least number of conditions is the best, for it gives the insured a greater amount of liberty without the danger of having his policy declared void in case of an accident.

When we think of the thousands of homes left every year without a head we cannot help but see that the benefits of life insurance are almost without limit. It has raised many a poor fatherless child, and has fed, clothed and educated thousands of young men and young ladies. It has saved thousands of widows from the washtub and factories, and has brought plenty into homes where starvation would have stared them in the face after the loss of the bread earner. It furnishes something which can be obtained in no other way, and no man should be without protection in the form of some kind of life insurance.

...COLLEGE BUS...

Leaves M. A. C. for Lansing at 8:30 a. m. and 1:30 p. m. Returning, leaves Lansing at 10:30 a. m. and 4:30 p. m.

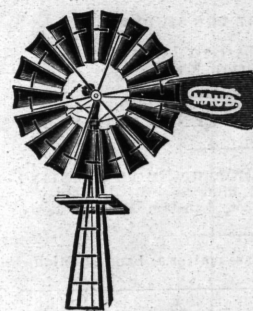
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For various reasons THE M. A. C. RECORD is occasionally sent to those who have not subscribed for the paper. Such persons need have no hesitation about taking the paper from the postoffice, for no charge will be made for it. The only way, however, to secure the RECORD regularly is to subscribe.

"Shall Domestic Science and Household Economy be Taught in our Public Schools?"

[Read before the Michigan Federation of Women's Clubs, Detroit, November 5, by Prof. EDITH F. McDERMOTT.]

Are there not already too many studies in our public schools? This is the first question one must encounter when a subject of this kind is introduced. It may be answered briefly in two ways: 1st. If this is better than something which we already have, it ought to be given a place even if it should require the displacement or curtailing of some other branch of study. 2d. Experience has demonstrated that girls in the grammar school or high school will spend two and one-half hours a week in the cooking kitchen without any appreciable loss to their other studies. This is the unanimous verdict of all schools having adopted such a course. It comes in as a diversion and relieves the mind from the strain and worry caused by purely mental exercises. What is expected of a public school training, we might ask. What is the training received in our public schools going to do for our boys and girls? What is it going to prepare them for? The only possible answer (bearing any semblance of truth) must be "to enable them to take their places in this busy world as good American citizens."

With this important question answered as briefly as possible, we shall now proceed to inquire into the necessary branches, the necessary equipments, we might say, that a public school training should give our boys and girls, to bring about the required results. If we had a good, old-fashioned teacher in our midst this question would immediately be answered with "Reading, writing and arithmetic."

Should manual training be introduced into our public schools? Should our boys and girls be taught that these hands of theirs are capable of becoming useful adjuncts to their mental powers, if properly trained? Should they not know that it is just as important for them to be able to take these ten willing servants and compel them to carry out the will of the mind, the command of the brain, as for a chemist to resort to his laboratory in order to work out the knowledge he already possesses. We might represent the child's mental power with the chemist's knowledge, and his hands with the laboratory to which he goes in working out a problem already existing in his mind, but which the world cannot appreciate until worked out in a practical and efficient manner. Thinking about

the advisability of manual training for children, from this standpoint, leaves little room for objections, to my mind. Talks of this kind are apt to sound a little self-congratulatory, at the best, when a teacher tries to tell what has been accomplished. I believe in the subject, I think it important, necessary, essential. You remember the late Dr. Holmes once said that he liked conceit, and compared it to the salt of the ocean, keeping life from becoming stale. Then, as if the good doctor feared the possible result from such a broad statement, he adds with his peculiar wit, "But because one likes a little salt, it does not necessarily follow that they have a desire to be pickled in brine."

The importance of domestic science as a part of every girl's school training is great. Why should it not be? Is not her whole life going to be influenced by her knowledge, or her want of knowledge on this subject? Hundreds of brains have tried to solve the perplexing problem of what is really best to teach our girls? Well, we can state with impunity a great many things, but surely the importance of domestic science and household economy should assert itself. Webster defines "economy" as "avoiding all waste." Is it not very important that this would be a grand training for every woman in the land? A woman capable of managing a household, avoiding all domestic waste, capable of knowing the very best methods for carrying out work of all kinds, avoiding wastefulness of any kind, able to serve her household with food capable of producing the best results, food that would not only sustain life, but sustain it in its best and highest form, enabling the body to perform its functions, nourishing the brain, the mental powers, as nature demands. Surely such knowledge is wonderful! Able to clothe the body in such a manner that is pleasing to the eye, and at the same time not forgetting the close relationship between general comfort necessary for every active person, and the aesthetic sense form into every cultured person; capable of knowing the house from a sanitary standpoint; recognizing the importance of attention to the small details connected with the plumbing of a house, the disposal of all waste matter; the ventilation, heating, cleaning, as well as being capable of making an attractive house on the outside. Our American women, as a rule, are gifted with such a high sense of the love for the beautiful that it is scarcely necessary to lay much stress on this point. We love beautiful things of all kinds; we love refined influences, beautiful homes, fine clothes, the best the market provides in every way. In our love for these beautiful things in life, a lack of proper training makes it doubly necessary that we should go to the very foundation, as it were, of the true essentials to produce these effects. Following out this line of thought we can readily see that this training must mean a greater number of happy homes. I am sure that if the people in general understood that you were providing for their comfort, you would meet with little opposition in this movement.

We have seen what domestic science can do for the homes of our country, and, as these homes make up the communities, the communities the states, and the states this grand country of ours, surely the result will warrant any effort on your part. If a woman is not annoyed by a filthy, unkept house it must surely be the result of her early home training. Even now, we do

not understand the great value of this subject, as the study is still in its infancy. It has only been within the last few years that it has received any recognition in this country, whatever. Napoleon said that "the truest wisdom is resolute determination." There is not a more worthy effort in life than this, where the definition of wisdom may rightly be applied, "If we care for men's souls, we must care for their bodies also."

In times past it has been difficult for women to obtain this information. I know of a case where an anxious wife applied to her family physician for advice concerning her invalid husband's diet. "O," replied the wise man, giving the woman a pitying glance, as if there was any significance attached to such an unimportant subject as a sick man's diet, "Give him, O, give him any kind of slop." What a grand veterinarian our country lost when that man decided to become a healer of the ills of man!

What does a course in domestic science and household economy consist of? I will try and give you a brief outline of this course as taught at the Michigan Agricultural College. It would require a regular syllabus to give the work in detail. The woman's department there offers a thorough course in household science and economics, theoretical and practical cookery, invalid cookery, lectures on special subjects, combination of dishes for meals, canning, pickle-making, jelly-making, etc. Chemistry, chemistry of foods (lectures and laboratory work), bacteriology, botany, physiology, physics, hygiene and sanitation, emergencies, sewing (plain), cutting and fitting, millinery.

The only efficient and practical way of spreading this knowledge to the masses is through the public schools.

The secretary of agriculture has been and is now greatly interested in collecting information regarding practical methods of introducing this study into our regular school work. In this connection it might be well to say that Dr. Harris, U. S. commissioner of education, is one of our firmest supporters in this movement.

I will give you a few thoughts collected from lectures given by Prof. W. O. Atwater, who, as you well know, is the best authority we have in this country on food and diet.

"What proportion of the cost of living might be saved by better economy of food, how far such economy would help the wage worker to a higher plane of living towards which he justly strives; how dietary errors compare in harmfulness with the use of alcohol, and to what extent the spread of the gospel and the imperfection of its fruit are dependent upon the food supply, are questions hardly possible of exact solution in the light of our present knowledge. With the progress of human knowledge and human experience we are at last coming to see that the human body needs the closest care. We are coming to realize that not merely our health, our strength and our incomes, but our higher intellectual life, and even our morals, depend upon the care we take of our bodies, and that among the things essential to health and wealth, to right thinking and right living. One, and that not the least important one, is our diet.

The power of a man to do work, depends greatly upon his nutrition. A well-fed horse can draw a heavy load; with less food, he does less work. A well-fed man has strength of muscle and of brain, while a poorly nourished man has not. A man's nourishment is not

the only factor of his producing power, but it is an important one.

This subject concerns the laboring classes in many ways. Statistics as well as common observation bear emphatic testimony to the better condition of the American as compared with European workingman, in respect to his supply of the necessities and comforts of life. That the American workingman, in many cases at least, turns out more work per day or per year than his European competitor is a familiar fact. That this superiority is due to a better supply of more nutritious food, as well as to the better use of machinery, and to greater intelligence is hardly to be questioned. But the better nourishment of the American workman is largely due to our virgin soil. With the growth of population, and the increasing closeness of home and international competition his own diet cannot be kept up to its present nutritive standard, nor can that of his poorer neighbor and his foreign brother be brought up to the standard, without better knowledge and application of the laws of food economy.

A picture in a magazine has just struck my eye. It is a family scene in a humble home. The four children are sitting at the table with bowls of milk before them, while the mother holds in her hand a loaf of bread which she is cutting into slices for their dinner. The room is neat but plain; the furniture is of the simplest kind, and the children's clothes are of ordinary material, with here and there a well sewed patch. The mother's air is that of a busy housewife, her thought, one of tender care for her family, but there is a trace of anxiety in the lines of her face which is in contrast with the careless eagerness of her little ones. Doubtless the father has taken his dinner with him to his daily work, by which, if he is an average bread winner, with health and industry, he may earn \$500 per year. If he is not addicted to drink, the whole of this sum will go for the support of his family. It must pay for food, clothing, fuel, rent, and the doctor's bills, leaving not a very large remainder for the extra comforts of the home, an occasional new carpet or piece of furniture, books, or a short excursion in the summer, with, perchance, a little for life insurance, the savings bank, or a timely help for some less fortunate neighbor.

When the mother goes to market to make her purchases, she is thinking of meat, and flour and potatoes, what they will cost, and how the folks at home will relish them. But in fact, tho' she does not realize it, she is buying certain nutritive substances in the food, flesh formers and fuel ingredients, which she and her husband need to repair the waste of their bodies, and to give them strength for their daily toil, and which their children must have for healthy growth and work and play. Her real problem, tho' she does not understand it, is to get the most and the best nutriment for her money. She is accustomed to buy certain materials, but, if by wiser selection, she could get abundant nutriment at less cost, and thus save a little extra money for comforts for the family or to put by in the savings bank, it would indeed be fortunate.

The real problem before this woman when she goes to market is to obtain, at the least cost, protein, fats and carbohydrates, needed to meet the wants of the family. Flavor and appearance are things to look out for, of course. She may buy them in the food if she has the money and is willing to spend it, but they are costly. She may sup-

ply them by good cooking and tasteful serving, but this will take skill and care, and too many women in her circumstances lack the one, and are averse to the other. Or she may ignore both flavor and appearance and if her husband does not like the food she sets before him, and other things about the home are not attractive, he will likely go to the "poorman's club," otherwise known as the saloon. The training of a well ordered home, or the cooking school, will tell how to make savory dishes from inexpensive materials. A little chemistry of the subject will tell how to select them.

Do you know that only one out of every five hundred girls in America receive a college education? Where are the four hundred and ninety-nine to have the opportunity of receiving this training if not in the public schools? "How," you might ask, "are we to go about this matter?" 1st. Work up public sentiment to the point that they want it. 2d. Go to your school board. Impress upon them the importance of this work, and get them to set aside one of the regular classrooms, if you cannot afford a special building, and then get a good, efficient teacher and let her do the rest.

The cost? You can secure a good teacher for from \$800 to \$1,000 per year, and the fitting up of a laboratory kitchen will cost from \$150 to \$200, depending upon where you buy your supplies, and how elaborate you are. In our public school work, we had twenty girls in each cooking class, and the average cost was 5 1/2 c. per pupil for each lesson. The sewing school cost but 3 1/2 c. per pupil for one year.

I am surely trespassing on both your time and patience in my lengthy appeal for the introduction of that science into our public schools that will not only build up happy homes, but keep them happy and comfortable.

Is it too much to ask of you, you who are surrounded by all that makes existence enjoyable, to put forth every possible effort, that we may have our girls taught to be good housekeepers, homemakers of such homes as we Americans pride ourselves as being part of our heritage, handed down by the brave ancestors who gave their lives for a country that would shelter and build up all that was grand and good in a nation? You before me have many advantages with your clubs and societies, and culture, which is not even possible for your less fortunate sisters. Will you not make it possible for every child born in our great and free America, to obtain an education fitting her to become a representative woman in all that goes to make up the higher, purer and loftier standard of womanhood?

I thank you kindly for your attention to these remarks, and wish that I were capable of bringing before you the importance of this work to such a degree that you would leave this meeting determined, to an individual, that no personal effort on your part will be spared to work up public sentiment to understand and appreciate the great importance of teaching domestic science and household economy in our public schools.

Your reporter heard the girls practicing their yell one evening last week. As near as he could make out it was:

"Rah, rah, ree!
Who are we?
Naught-naught coeds,
M. A. C."

Life is short—only four letters in it. Someone has noticed that, curiously, three-quarters of it is a "lie" and half of it is an "if."—*Ex.*

Official Directory.

Sunday Chapel Service—Preaching at 2:30 p. m.

Y. M. C. A.—Holds regular meetings every Thursday evening at 6:30 and Sunday evenings at 7:30. S. H. Fulton, President. C. W. Loomis, Cor. Secretary.

Y. W. C. A. regular weekly meetings for all ladies on the campus Tuesday evenings at 8 o'clock, in the ladies' parlors. Meetings on Sunday evenings with the Y. M. C. A.; Miss Edith F. McDermott, President; Miss Alice Georgia, Cor. Secretary.

Natural History Society—Regular meeting second Friday evening of each month in the chapel at 7:30. H. C. Skeels, President. W. R. Kedzie, Secretary.

Botanical Club—Meets first and third Friday of each month in Botanical Laboratory at 7:30. T. Gunson, President. W. R. Kedzie, Secretary.

Dante Club—Meets every Wednesday evening at 7:30 in Prof. W. O. Hedrick's office, College Hall. Prof. A. B. Noble, President.

M. A. C. Athletic Association—C. B. Laitner, President. G. B. Wells, Secretary.

Columbian Literary Society—Regular meeting every Saturday evening in their rooms in the middle ward of Wells Hall, at 7:00. E. H. Sedgwick, President. C. F. Austin, Secretary.

Delta Tau Delta Fraternity—Meets Friday evenings in the chapter rooms on fourth floor of Williams Hall, at 7:00. E. A. Baker, President. C. P. Wykes, Secretary.

Eclectic Society—Meets on fourth floor of Williams Hall every Saturday at 7:30 p. m. C. D. Butterfield, President. Manning Agnew, Secretary.

Feronian Society—Meets every Friday afternoon at 1:00 in Hesperian rooms. Miss Sadie Champion, President. Miss Marie Belliss, Secretary.

Hesperian Society—Meetings held every Saturday evening in the society rooms in the west ward of Wells Hall at 7:00. J. D. McLouth, President. R. H. Osborne, Secretary.

Olympic Society—Meets on fourth

floor of Williams Hall every Saturday evening at 7:00. H. W. Hart, President. C. J. Perry, Secretary.

Phi Delta Theta Fraternity—Meets on Friday evening in chapter rooms in Wells Hall, at 7:00. W. G. Amos, President. F. H. Smith, Secretary.

Union Literary Society—Meetings held in their hall every Saturday evening at 7:00. E. A. Robinson, President. S. F. Edwards, Secretary.

Tau Beta Pi Fraternity—Meets every two weeks on Thursday evening in the tower room of Mechanical Laboratory. G. A. Parker, President. E. H. Sedgwick, Secretary.

Club Boarding Association—I. L. Simmons, President. H. A. Dibble, Secretary.

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News From Graduates and Students.

Lyman A. Lilly, with '77, has been elected register of deeds in Allegan county.

J. N. Estabrook, '88, of Detroit, has been spending several days in Lansing and at the College.

E. B. Hale, '93, commissioner of schools in Ionia county, visited the College last Thursday.

S. L. Ingerson, with '98, is working on his father's farm at Hopkins Station, Allegan county.

Frank Talmadge, with '93, is the recently elected circuit court commissioner in Ingham county.

H. F. Buskirk, '79, will represent the second district of Allegan county in the state legislature this winter.

J. E. Stoffer, who took post graduate work here last year, has charge of the ninth grade in Mason schools.

We notice that B. H. Halstead, with '97, was one of the timers in the recent Purdue -U. of M. football game.

Of course you are aware that Jason E. Hammond, '86, will be the next superintendent of public instruction for Michigan.

Lieut. Lewis and family started Saturday from Baltimore for El Paso, Texas, where the lieutenant will join his regiment.

W. G. Merritt, with '92, has been spending several days at M. A. C. He helped send election returns to the College Tuesday night.

In the *University Scientific Magazine*, Knoxville, Tenn., Prof. Charles E. Ferris, '90, has an article on "Free-hand Letters for Working Drawings."

Mr. and Mrs. Gunson received last Saturday a box of fine chrysanthemums, violets, and carnations from Albert Boehringer, '96sp, of Bay City.

Faith in W. J. Bryan and the cause of free silver led Clay Tallman, '95, to present George F. Richmond, '98, with a \$5 hat—after the votes were counted.

C. P. Locke, '91, is the only survivor among the M. A. C. men who were candidates for office in Ionia county. He was elected circuit court commissioner by the silver democrats.

John W. Tracy, '96, met with a very severe accident in Detroit Friday, October 30. He was riding his wheel along the pavement and, in crossing the street car track, slipped and struck his temple on the track. For several days the attending physician thought his injuries fatal, but he has now improved so that his recovery is expected.

Nothing succeeds like success, or words to that effect. I. B. Winsor, [with '89], has purchased the Cascade Creamery Co.'s plant at Obriens, which adds another important factor to his already complete creamery plant at 713 Second avenue. Mr. Winsor is acknowledged to be one of the most successful creamery men on the coast and has today the best trade in the city. Mr. Winsor only makes the highest quality of butter and sells it for what an inferior quality of butter can be purchased for elsewhere. This with his thorough knowledge of the business accounts for his phenomenal success.—*The Argus, Seattle, Washington.*

Friend—"Have you been writing any more poetry?"

Poet—"No; couldn't pay my gas bill last month and my meter was taken out."—*Student's Herald.*

Alice—"I heard something about you today. Anne—"Yes; this new lining they are using in dresses makes a frightful noise, doesn't it?"—*Yonkers Statesman.*

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The above commonplace article of commerce is seldom credited as being associated with anything of interest by the average person who has it applied to his horses feet merely as a necessary appendage and nothing more, yet if we inquire into its history we find it at times surrounded with so many curious ideas and superstitious notions that it becomes even romantic; while those who were engaged in the handicraft of shoeing were to be found in various grades of society, from the humble tradesman to those of most enviable rank.

With the Arabs the blacksmith is held in great esteem and is permitted to enjoy many privileges. On the plains he is the sole occupant of a single tent, and not crowded like his less fortunate neighbors; he is not assessed like the other members of his tribe to contribute to the general fund, nor is he called upon to shelter those who are tentless in times of emergency. The lawless members of the tribe, who largely live on plunder, are obliged to share their ill-gotten gains with the blacksmith upon their return from a plundering expedition, notwithstanding that he has not taken any active part in the expedition. On the return from the purchase of provisions each tent is required to pass over a certain share to this lucky man, nor is he forgotten when camels are killed for meat, for he is given the part between the withers and the tail, a choice cut, as it contains not only the saddle, but the tenderloin, but above all he is granted the gift of life in times of conflict. During a battle with another tribe, if he is on horseback with arms in his hands he is as liable to be killed as any one else, but if he dismounts, drops upon his knees, and with the loose mantle of his shoulders imitates the action of a bellows, by drawing it about him and working his elbows in a manner to produce the effect, his life will be spared; indeed to kill one is regarded as the most infamous crime by the Arabs and one which recoils upon the guilty tribe with such vengeance that they will be pursued by a curse forever after. The extensive privilege which the blacksmith enjoys in Arabia is without doubt due to the great benefit which he confers through his handicraft to the animal which is beloved above all others by the Arab—his horse.

In Abyssinia a very different state of affairs is said to exist, for here he is looked upon as a sorcerer capable of doing all sorts of disagreeable things to unoffending people, so much so that he has become a social outcast, and many people live in fear of his resentment.

In other eastern parts of the old world the trade gains more or less favor, according to circumstances, though it does not fall to as low a level anywhere as it does in Abyssinia. Coming westward we find in France the social standing of the craft closely related to the conditions of the times. During the dark ages, when all was strife, and the mounted soldier a most necessary branch of the army, the blacksmith soon became a man of enviable rank and the art of farriery much coveted by the highest dignitaries of the land. Young nobles were required to serve several years apprenticeship with the shoeing smith before attaining he rank of chevalier

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or complete warrior. Of so much importance was this craft at this time that we find distinguished families glad to adopt it as their surname; thus we have in France the family, La Ferriere, who still retain the figures of horseshoes upon their scutcheons, while in Scotland we have the honorable name of Ferrier.

"From whence came Smith?

All be he Knight or Squire,

But from the Smith that forgeth at the fire."

Many, curious, and broadcast are the superstitions which surround the horseshoe. In some parts of England it was once the custom to nail an old horseshoe against the west door of the church. This was supposed to prevent malicious witches from untying the winds, which delighted in demolishing all such holy structures, while on the Continent it has been customary to nail a horseshoe over the door to keep the witches out. In Holland a common superstition is said to exist that if a stolen horseshoe be placed upon the chimney piece it will bring good luck to the house. In other parts it is thought that a horseshoe, to possess its mysterious charms, must be found upon the road after having been cast from a horse and then nailed in some conspicuous place about the house. Seafaring men are usually particular about having a horseshoe nailed to some part of the vessel in order that good luck may attend her during the voyage.

In some unaccountable manner St. Eloy became the patron saint of farriers about the seventh century. He was not only a shoer of horses, but was supposed to be inspired in such a way that he could work wonderful miracles amongst diseased animals. Medieval delineations usually depict this holy bishop in the act of shoeing a horse—during which operation he continues to wear his church robes. The patronage of St. Eloy may have attracted the Druid priests, Anglo-Saxon monks and continental prelates to the anvil, for they are said to have been skillful workers in iron. Remarkable legends are told concerning the wonderful operations of these men, some of them even going so far as to say that his satanic majesty was one day seized by the nose with the hot tongs of a worker, whom he was trying to tempt.

The period when horseshoes were first applied will no doubt ever remain a mystery, but recent discoveries show them to have been in use for several thousand years. This is little to be wondered at when we come to consider that their primary, and perhaps most beneficial effect, is to prevent the wearing away of the hoof, though they are now used to cure or prevent certain diseases of the feet,

also to afford a grip for the draught horse and to prevent slipping, while they are also taken advantage of by the trainer of the roadster, and shoes of different weights are applied to improve the horse's action and develop his muscles, in a similar manner to the athlete who uses dumb-bells to get himself into condition.

As a rule horseshoes are made of iron or steel, but even precious metals have been used in their manufacture. It is recorded that the first Norwegian king, in the eleventh century, caused those who sought his court to shoe their horses with golden shoes, and other extravagant leaders have indulged in similar absurdities.

Rawhide, hardened through hydraulic pressure, has been successfully used for horseshoes, as has also buck horn, buffalo horn and elk horn; while bronze as well as brass, have also been tried. Perhaps the latest article to find its way into the forge is aluminum, which, on account of lightness, has at least that feature to commend it, but has been so little used that it may still be regarded as in the experimental stage.—Department of Veterinary Science.

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