THE SPECULUM.

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Prof. Calvin Tracy.

Students who were at the Agricultural College in its early days will read with sincere sorrow of the death of this able teacher and faithful friend, which occurred at his residence in Lansing, on Sunday morning, July 28. He had reached the advanced age of eighty-four. He bore his years with much vigor, yet of late had been somewhat broken. During the last few weeks of confinement and suffering he was most tenderly cared for by his wife, Mrs. Harriet Sessions Tracy, and by the many devoted friends who had gathered around him during his long residence in Lansing. His faith in the eternal verities was strong all through his life and gave him great rest and peace as he gradually passed away. The funeral service was held at his house on Tuesday afternoon, July 30. It was conducted by his pastor, Rev. W. S. Sly, of the Franklin St. Presbyterian Church, which he had for many years so generously helped with money and work. The funeral called out a very large company, from all walks of life—men and women who had come to such knowledge of his great soul as led them to love and honor him. Besides his wife he leaves one son, who is married and in business in Jackson.

A special memorial service was arranged for Sunday evening, August 4, in his old church, which was attended by a congregation that filled the house. Conspicuous in the congregation were the many gray-haired men and women who had been the friends of his later years. Excellent music was rendered by a choir of male voices. Rev. W. S. Sly read appropriate selections of scripture, and made an address alluding to the noble Christian character of this friend of their church who so lately had been with them. Prayer was offered by Capt. J. H. Price. Prof. A. J. Cook paid a noble tribute to the friend and teacher who was gone. President Clute, who was also a student in Prof. Tracy's classes at our college, said: There is, perhaps, no place where a man is more quickly and severely tested than in the school room. Children, even, are very quick to detect a teacher's weaknesses, and to take advantage of them, while young men and women are soon so familiar with a teacher's foibles and his excellencies that they will often plan beforehand to escape his censure by conforming to his weakness, or to receive his commendation by compliance with his excellent requirements. The teacher, who after long experience in the school room, commands the love and respect of his students is almost always a man of marked power in some directions, and of a personal character pure and strong. This test of the school room was borne by our departed friend, Prof. Tracy, in such way as proved conclusively his large and noble power as a teacher and a man.

In considering the elements of his power as a teacher an important place should be given to his knowledge. He knew his subject through and through, on all sides, in all its aspects and relations. He had command of his subject. He was better than the text-book, for he had in him all that was in the book, and much more. He had none of the false pride which in some cases leads to discarding the text-book entirely, for he knew that the text-book was valuable to the student, though perhaps, useless to the professor. We students always felt that though the text-book was helpful for our study out of

class, it was valueless to us when in his presence, for his knowledge was broader and deeper than the book's, and his live illustrations and personal enthusiasm were more inspiring than any dry text. Our own lack of knowledge of the subject might be vast and comprehensive, but we always knew that he knew. This ready and exact knowledge is always essential to the true teacher. Woe to the man who attempts to teach without it. His keen students soon learn his weakness, and they have no mercy upon him. His power for good over them is gone.

In addition to his thorough knowledge Prof. Tracy was always clear, concise, and exact in his statements. He did not envelop a subject in fog; he did not hide it with abundance of words; he did not mislead by inexact affirmations. The clear current of his knowledge found expression in clear cut sentences, that brought the thought out so boldly that the dullest student could not help but understand. If we were not clear his limpid statements came to our aid; if we faltered for the right word that word came at once from his ready lips; if lack of knowledge betrayed us into circumlocutions and entanglements of speech his facile tongue unraveled the maze and put the thought in a few terse words. Of course this clearness and exactness of speech were due to the orderly bent of his mind. He liked to do things in orderly ways, and insisted on an orderly method in our work in his classes. When we enunciated a proposition we knew that his clear mind followed every word and that his orderly method would be offended at any slipshod utterance of ours. When we put a diagram on the black-board it was with the consciousness that his eagle eye could take it in at a glance and detect any error; and when we rose to demonstrate our theorem or to solve our problem we were certain that his orderly, methodic habits would discern and reject any rambling, disconnected work or word of ours. Probably some of us were then at times a little impatient with his invincible determination that we should be clear, exact, orderly. But long ago we learned how far above rubies is the value of the discipline he gave us.

Then as a teacher Prof. Tracy had that indefinable something that we call tact, aptness, faculty. To his wide knowledge and clear statement and exact method he added the capability so to present his subject as to interest and inspire his students. In the teacher knowledge is essential, clear speech and orderly method are essential, but all these fail when faculty is lacking. Here is a point on which there is a wide spread mistake. It is often thought that if a man knows a subject he can teach that subject, but knowledge, and the ability to impart knowledge are very different things, and often they do not go together. Often the thoroughly able scholar lacks what is called "the faculty to teach." Lacking this he fails, and his friends are greatly incensed because his students, and others, declare that he is not a good teacher. But all who have given attention to the subject of education know that something must be added to knowledge before the able man can become the able teacher. This something, this *faculty*, Prof. Tracy had in an eminent degree. There was that about him that made the subject he was teaching a living subject to his students. His strong personality was projected into his subject, and so his students were led not only to respect for the teacher but to that deep interest in the subject that inspired them to hard work, and that led by and by to noble accomplishment.

The noble man whose body was laid away in its mother earth a few days ago, had all these qualifications that go to make up the able teacher. He had large knowledge; he had clearness of statement; he had exactness of method; he had faculty to teach. Having all these qualities it is no wonder that he was able to lead us boys strongly, and to move us deeply, and to help us to discipline

and power. To-day in this city and in many a city and many a country neighborhood, strong men—lawyers, farmers, editors, mechanics, preachers, merchants—trace their success in a large measure to the knowledge and discipline they received in his class-room, and to the devotion to work and to noble aims that was inspired by his great ability, his deep knowledge, his strong personality, and his noble character.

Our Manual Labor System.

J. W. TOUMEY, ECLECTIC SOCIETY.

Since the foundation of this college the farming community of the state, and all other classes, have recognized in this institution the embodiment of physical as well as social culture. The manual labor system, from our earliest history, has been regarded by all true friends as the corner-stone upon which the popularity and greatness of this college depends. This system is important, not only as a factor by which many students are enabled to earn a part of their college expenses, but as a means by which all may obtain healthful and beneficial exercise. It cannot be denied that two or three hours' out-door work each day is of vast benefit to students who, from necessity, pass the greater part of their time in their rooms or at recitations.

All who come to this institution come with the understanding that if they become students here in the agricultural course they are expected to labor on the farm or garden at least three hours each school day. When this institution was organized the college farm was mostly an unbroken forest. Then the student employed the time required of him at manual labor in burning log heaps, and other work incidental to the clearing of a large farm. In her early history it was impossible for the college to furnish her students educational labor. With but a few acres of tillable soil, experiments in agriculture and horticulture were out of the question. Orchards and small fruits were unknown on the college farm. At that early day we could not point with pride to the fine stock which at present is an honor to the state.

As the forest gradually gave way to fertile fields and broad meadows, as the stock increased in number and improved in quality, the opportunities for educational labor and experimental work became better and better; until at the present day with all the important crops known to this climate under cultivation, the garden filled with numerous varieties of vegetables and small fruits, orchards bending low beneath their loads of pears, cherries and apples, the advantages for experiments, observations and educational work in agriculture, horticulture, and kindred pursuits are unsurpassed.

Taking into consideration these numerous advantages, which would be of great benefit to the student if properly applied, the question I would ask is this: Does the average student derive as great benefit from the work system as he should? I think it is safe to answer in the negative. As the labor system is conducted at present, the money value and exercise is substantially all the student receives for the time employed at manual labor. Many times students are required to do work with tools which they know but little about. With very limited instruction as to the manner in which they are to be used it cannot be expected that the labor performed will be entirely satisfactory, or that the student will gain any permanent educational benefit.

When students work their allotted time day after day, shoveling dirt or raking lawns, work which in no sense can be termed educational, would it be consistent to expect that any great interest will be taken in the labor? It has been argued by many that if students receive remuneration for their labor it cannot be expected that the work will be entirely educational. Granting this to be true and taking into considera-

tion the maximum of eight cents per hour which is paid for student labor, I ask if this remuneration can be compared to the benefit which would be derived from educational labor under the direct supervision of practical and scientific men employed for the purpose of giving instruction in all the forms of student labor. Let the work be of such a nature that one feels that he is acquiring knowledge, that he is accomplishing something that will be of permanent benefit to him.

Following in the footsteps of some of our eastern colleges, if our agricultural students were each allowed the use of a small plat of soil—one or two square rods—upon which they could plant and grow various small fruits, grains and vegetables, and compete with each other in their desire to obtain the best results, a greater impetus would be given to agricultural work. Following this plan, the student would have ample opportunity to observe and study the growth and character of plants grown under his direct care.

Why not have the manual labor of such a character that it will consist largely of educational and experimental work? I think it is safe to say that one hundred and twenty-five dollars is as great a sum as the average agricultural student receives as compensation for his work during his four years' course. If the time spent in earning this sum were employed to a much greater extent at educational labor, would it not be of more permanent benefit to the student?

What we need is a reformation in the work system. Our college has the facilities for making this one of the most important and instructive parts of the entire course. Furnish the students educational labor and this reformation is at hand.

In 1885 the United States spent as much on education as England, Germany, France, Austria and Russia combined.

Co-Operation is Practical and Right.

H. F. HALL, PHI DELTA THETA FRATERNITY.

The employer's co-operation with the workman may, in a general sense, be considered as coincident with the alliance of capital and labor. In a well founded combination of this sort the workman is supposed to have such an interest in the establishment for which he works as will make it of great advantage for him to put forth his most earnest effort for the advancement of the purposes of the institution.

If in all establishments for money making purposes, the workmen, as well as the proprietor, have a financial interest, they will find that the only way of increasing their income is by a proportional increase in the gain of the establishment, and that their gains depend directly on the exertions of the workmen themselves.

By such an arrangement, the now existing breach between capital and labor would be likely to be suppressed. The laborers, instead of going through the daily routine of work, with only their invariable daily wages for a compensation, would have a strong incentive to spur them on to greater efforts. The quality as well as the amount of the work would be taken into account in assigning the profits, thus giving the workman another reason for increasing his slack energies.

When an employer wishes to obtain workmen under this arrangement, he could easily find those who, if not actually and impartially interested in the welfare of the establishment, would be led to associate their own prospects with those of the institution, in-as-much as the interests of the capital are directly in proportion to their own. The income of the employer is naturally allied to that of the establishment, and as the compensation of both employer and employed depend directly on the income of the same institution, the ends sought by both would be identical, and there would be a strong tendency to bind

the proprietor and his workmen together for their mutual welfare.

A characteristic feature of mankind is ambition. When any one is obliged to fill a menial position all his life, and secure only a constant sum for his service, he is likely to become discouraged, and to seek to better his condition. In large establishments the prospects of promotion are exceedingly limited, and in order to increase their wages the laborers strike. If now the employes, as well as the employer were allowed to share the profits, they would see the impracticability of striking, and would be content to accept the same terms as the employer. Naturally, the employer, on account of his larger responsibility and superior knowledge, should receive compensation according to the value of his time, as compared with that of those he employs. This arrangement would receive little objection on the part of the workmen, were they allowed their just dues.

Co-operative establishments are not in extensive practice, because the few experiments that have been made in this direction have proved failures. The reason of these failures has been because of the way in which they originated. It could be easily seen by a competent judge of such affairs that they would not be successful. The employers were too ambitious to increase their own gains, employes were not satisfied with their share, or there was too much competition, so their downfall was foreseen in nearly every case.

The popular cry of the present time is "Give the Laborer a Chance." What better chance could he have than one of this kind? He is given to understand from the start that his wages depend on the quality and amount of his labor; because the more first-class work a manufacturing house turns out, the more money there will be to divide among its laborers.

Co-operation, therefore is right, because it "Gives the Laborer a chance," and it is practicable because it may be accomplished by a simple compromise.

Labor Organizations.

GEO. L. CHASE, DELTA TAU DELTA FRATERNITY.

The exact time and place of the birth of labor organizations are not probably known; but the prototype may be considered as the guilds of the middle ages, which were established for religious purposes. Similar brotherhoods afterward developed into combinations of merchants for mutual assistance and mutual protection, and were followed in the fourteenth century by craft guilds, which were unions of the handicraftsmen such as the weavers. The principle upon which the guilds were established, were mutual support, mutual protection, and mutual responsibility. Independent at first, they gradually extended beyond the influence of particular trades, and ultimately became far more powerful than the municipal corporations of the present day.

For four or five centuries these organizations were more or less blotted out of existence by severe laws. From 1810 to 1812, when England was at war with nearly every nation in the old and the new worlds, trade was completely paralyzed and the poor people were starving upon their low wages. These disasters were made more serious by the introduction of labor saving machinery, which dispensed with seven out of every eight laborers. Starving and thrown out of employment, they formed the strongest and most secret organization ever known in that country. Their object was to destroy the new machines; and for three years the havoc they committed especially in Yorkshire, Lancashire and Nottingham was immense.

In 1703, the Watchmakers' society and the Norman society were established in London upon the principle of the guilds. The examples thus set were followed by the rapid formation of other societies, all of which being illegal were obliged to be held privately. It was not until 1824, that combinations of workingmen were rendered legal for im-

proving the wages and reducing the hours of labor and for these two purposes only. In 1871 the "trade union act" was passed making trade unions legal societies and preventing the members being liable to prosecution for conspiracy, an offense for which in days gone by, so many had suffered imprisonment; while by an interpretation given Russell Cheney's act of 1868, due prohibition was given to the funds of the society, and from now on trade unions were acknowledged to be institutions of the country.

Probably, the first and most natural basis upon which the labor union was organized was to benefit the laborer from a financial point of view, which could not be done except as they acted in a body--for, "in union is strength." In Manchester, the carpenters are paid a half penny per hour more than in Liverpool. The reason is that in Manchester both employers and employed are thoroughly organized and an amicable relationship exists between them; in Liverpool they are comparatively disorganized. Where such an amicable relationship does not exist between the employers and employed, other means must be resorted to to secure justice. In the Newcastle engineering strike, the employers acknowledged that the condition of trade from the beginning admitted of an advance of wages, yet no increase was proposed till the trade unions were brought to bear.

The advance of wages, however, is not the only object of a trade union nor the sole purpose of a strike. Sometimes the men demand shorter hours. To work a less number of hours for the same amount of wages is naturally attractive to the workman. He not only sees that such an arrangement gives him more time for recreations and for the enjoyment of home comforts, but that the reduction of hours causes more of his fellow workmen to be employed. The demand for a commodity being the same and the number of working hours diminished, more men must be employed to produce the same amount of any manufactured article in the same time. Men who were forced to be idle were thus provided with employment. The additional workmen became spenders as well as producers; and, according to one of the first rules in political economy "production depends upon a good and healthy consumption." No action has been crowned with such signal success as that of bringing about a reduction of hours.

What is very surprising is that the employers believe they can get more work out of a man when they work him to death. According to a rule in political economy, "the man who works so moderately as to be able to work constantly, not only preserves his health the longest but in the course of a year, executes the greatest amount of work."

It is now, however, a well ascertained fact, that within certain limits, more work is done, as a rule, when there is a prospect of an early cessation from work than when men know that they are doomed to work many continuous hours. A few years ago, the average day's work in England was ten hours, on the continent it was twelve, in Russia sixteen or seventeen, and yet it is calculated that two English mowers will do in one day the work of six Russian mowers for the same time.

Russian factory operatives work seventy-five hours in the week while those in England work only sixty. Yet the work done by the former was only one-fifth of that by the latter.

Trade unions aim at a variety of objects for the mutual benefit of the members—such as contributions for the relief of the sick, disabled and distressed, and measures to promote sympathy, social enjoyment and mental culture.

The notion that the unions force the employers to pay to incompetent workmen the same wages as to good workmen is erroneous. True, the unions sometimes agree upon a minimum rate of wages, but if a man be not worth that minimum, no employer need employ him; while if he be a man of

superior skill or extraordinary working ability, there is no limit to the amount of wages an employer may give him.

It has been thought that labor organizations encourage strikes, but such is not the case. Statistics show that where unions exist there has been a marked decrease in strikes over those where unions do not exist One of the most pleasant features in unionism is that the most powerful associations show least inclination to strike. Strength has been accompanied by intelligence and discretion. The Glassmakers' society includes within its organization every man engaged in that trade, and has therefore the entire monopoly; and yet they seldom have any dispute. If a dispute does arise, it is amicably settled by representatives from each organization.

The most important educational work which the trade unions are preparing, is that of familiarizing the workmen with the true relation of capital and labor, which is one of the most important if not the most important questions of to-day in political economy.

SCIENTIFIC.

Natural History Society.

At the meeting of the Natural History Society, held July 12, Mr. P. G. Holden delivered a very interesting talk of which the following is a brief abstract:

A FEW WORDS ABOUT THE BEAR FAMILY.

The bear is found in all the continents save Africa and Australia. The classical writers Herodotus and Virgil mention Libyan bears, and according to Pliny Ethiopian hunters exhibited Numidian bears in the Roman circuses before the Christian era. To the naturalist, so far as acceptable proof exists the bear is unknown to Africa.

The bear is a *plantigrade carnivora* with a thick, clumsy body and rudimentary tail. Teeth are forty-two; molars broad and tuberculated, as we would expect when we know that the bear lives largely upon vegetables. The lower jaw is so hinged as to permit of a lateral movement. This is necessary to those animals whose diet is of a vegetable nature. In most of the carnivora only the vertical, or scissor movement, as it is called, is found. The digestive organs are also modified in accordance with the diet. The bear is described as being very awkward and clumsy, but it seems to me that he possesses a grace peculiar to himself which we might call bear grace. Many stories have been told regarding the wisdom and strength of the bear. By primitive people he is worshiped and the American Indians make due apologies before eating his flesh.

The brown bear is found in Europe and Siberia. In ancient times this bear, under the name of Caledonian bear, was brought from Great Britain to Rome for sport in the amphitheatres.

It is said the Russians of Kamtchatka never venture to fire on a cub when the mother is near; for if the cub is killed she becomes enraged and will cease her revenge only when life is extinct. The jungle bear or large-lipped bear of India is large and uncouth. The underlip is much enlarged and the nose is a large, irregular mass of flesh. This bear travels cross-legged and has a peculiar, wagging motion to the body. These peculiarities make it valuable to showmen. The food of this bear consists of vegetables, fruit, honey and insects. As is the case with most bears it will eat flesh only when compelled to by hunger.

The white or polar bear is an exception. Its diet is almost entirely the flesh of other animals, as the seal and fish. Says one writer, "The jungle bear has a great liking for the large Indian ants, and a peculiar method of obtaining them. He is an accomplished sucker and blower. On arriving at an ant-hill the bear scrapes away with the fore feet until he reaches the large combs at the bottom of the galleries. He then with

violent puffs dissipates the dust and crumbled particles of the nest and sucks out the inhabitants of the combs with such violent inhalations as to be heard at two hundred yards distance or more. Large larva are in this manner sucked out from great depths under the soil." Brief mention was made of the Malayan bear, the Syrian bear which is of historical value, being often mentioned in the Hebrew scriptures; and of the small bear found in Chili and Peru.

The black bear is confined almost entirely to the temperate zone. It is of a roving disposition and is a typical species in which to study the habit of hibernating. In early winter Bruin enters a cave or hollow log where he sleeps until spring. During this sleep a tappan is formed which closes the alimentary vent. The grizzly bear is the most formidable of bears. They sometimes weigh eight hundred pounds. Their only enemy is the American panther. The polar or white bear is different in shape from other bears. Its neck is very long and the sole of the foot is one-sixth the length of the animal. It is the only species that is aquatic in its habits.

Dr. Mayo spoke of the structure, use and peculiarities of horses' teeth, after which Mr. Rittenger read the following paper:

THE GRAIN APHIS (*siphonophora avenæ*).

About six weeks before harvest the presence of the grain aphis began to excite the farmers of Michigan and northern Indiana. To-day, July 12, the louse is practically gone. The natural history of the louse is curious. In the fall there is a pair, male and female. After mating, the male dies, and the female lays her eggs. These hatch the next spring and produce only females. In a few days these begin to produce living young which are also females. In this way from one female may come in a single season countless numbers of the pests. In the early part of the season they live upon the leaves, but when the heads begin to form they go to the base of the kernels, and with head down suck out the juices which should go to mature the grain. From these few remarks we see somewhat the rapidity with which they increase and the harm they are capable of doing if not exterminated. They are exterminated and we will next pass to their enemies. The first is a small parasitic fly, which lays its eggs, one for each louse, in the abdomen of its host. The larva when hatched feeds upon the louse, thus killing it, and then uses its shell as a cocoon. Each fly lays many eggs in a day and the number of lice killed in this way is astonishing. A parasitized louse can always be told by the brown, globular, glassy appearance of the abdomen. Ladybird beetles and their larvæ also destroy these lice. The beetle lays its eggs among the lice, and the larva comes forth to a bounteous feast.

Another enemy of the grain aphis is the syrphus fly larva. These larvæ are the young of a moderately heavy bodied fly with yellow bands on the abdomen. They are gray maggots, the posterior end of which is large and heavy while the anterior end is pointed. When a louse is found, the mouth end is placed against it, and by a sort of inrolling the louse is drawn partially in and held by a sort of suction. In the mouth there is an organ used only to puncture the louse while the great suction draws out its blood and the empty skin is cast aside.

Chrysopa flies are beautiful, small, gaily colored, lace-wings, which lay their eggs on the ends of long hairs on the plant where the aphis is and the larvæ are perfect tigers to destroy the lice. They are much more active than those of the syrphus fly or lady-bird beetle. These larvæ are furnished with two strong, horn-like jaws which are used as sucking tubes. When the larva meets a plant louse he clasps it in these jaws and begins sucking the blood. Soon the louse will be held with one jaw while the other punctures the louse in various places, thus getting blood from all parts of the body. The rate at which the plant lice have disap-

peared from the combined attacks of these enemies is surprising. Four days ago plenty of lice were to be found, twenty on a head was not uncommon; to-day one on twenty heads is more uncommon—all on account of these wonderful little workers.

Mr. Rittenger was followed by Mr. Clinton, who gave a short talk on

FAIRY RINGS.

The fairy ring is caused by a fungus, *Marasmius oreades*. The rings are circles of grass of a dark green color, the outer edge being well defined. These rings may become as much as thirty feet in diameter. It is thought they originate from a single fungus whose growth makes the soil unfit for its growth the second year. The mycelium spreads in all directions and a new crop is produced. The manure arising from the dead fungi causes the increased growth of grass.

A new Wheat Louse Parasite.

In the last issue of THE SPECULUM we reviewed Bulletin No. 50, and spoke of the serious and wide spread invasion into the wheat fields of the country of the grain plant louse, *Siphonaphora* (Aphis) *avenæ*. The danger which threatened the wheat and oat crops was imminent and only the friendly aid of insect friends, those tiny Lilliputs that even exceed in prolificness and voracity the plant lice themselves, could save our farmers from the threatened destruction. In Bulletin No. 51, since issued, Prof. Cook has described with full and accurate illustrations the several insects that have been engaged in the good work. Of these predaceous forms, the several ladybird beetles, imagos and larvæ, the syrphus fly maggots, and the ant lion, larva of the beautiful green chrysopa fly, are all described. The old braconid parasite, *Aphidius avenaphis*, is also referred to as one of the little friends that has helped to drive the foe from among us.

It is rare that the farmer has such a graphic illustration of the mighty power of these little friends to ward off danger and even total destruction. June 30th the heads of wheat were fairly alive with the grain lice. From six to ten lice often clustered around a single kernel, and as many as two hundred were actually counted on a single head of wheat. Of course it goes without saying that so many lice must have sucked the very life from the grain, unless they in turn were attacked and destroyed. Ten days later the lice were nearly all gone, and the grain crops were rescued and safe. From actual count we find some fields of grain have suffered a loss of twenty per cent of the grain by the brief attack already made; imagine the result had not friends come to the rescue, or even if they had delayed their coming a few days longer. Among these tiny helpers is one that is probably a new species, and for which Prof. Cook proposes the name *Aphidius granariaphis*. This little fly has been a major factor in driving the enemy from our fields. The lice that are the victims of these eager parasites are easily distinguished. They (Fig. 1) are short, rounded and dusky gray in color. After the larva has consumed the viscera of the louse it uses

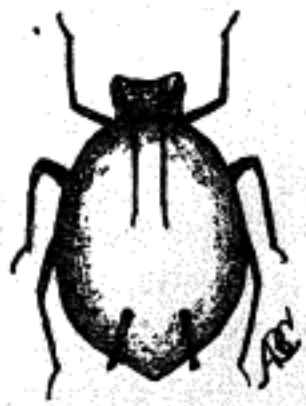

Fig. 1—Parasitized louse much magnified.

Fig 2—Parasitized louse, showing exit opening.

the skin of the latter as a pupa case. Very soon the fly (Fig. 3) issues from a small,

rounded hole in the upper hind part of the abdomen (Fig. 2) of the louse. The flies mate and very soon the female begins to lay her many eggs, one in each louse. Of course the parasitic larvæ fairly swim in the rich blood of their victim, and so are rapidly developed. Thus we understand how it is that in four or five days from the time that the fly is seen laying its eggs in the lice, the larva is matured, the pupa formed, and in a day or two more, the parasitic fly is looking for new victims. Thus in hardly more than a week the parasite passes through its entire life history.

APHIDIUS GRANARIAPHIS N. SP.

Fig. 3—Adult female greatly magnified.

The flies are one-tenth of an inch long. They are black above and yellowish brown beneath. The antennæ are black, while the front, mouth parts and legs are yellowish brown. In some specimens the femora and tarsi are dusky, and the under side of the abdomen quite dark in color. In some specimens of the scores examined the upper part of the abdomen is yellowish brown, except the pedicel and tip which are always black. There seems to be much variation in the color of the legs and abdomen, though in most cases the dorsal surface is black and the ventral surface and legs brown. The occiput, or collar, connecting the head and thorax is brown. The antennæ are sixteen jointed in the female (Fig. 3) and seventeen in the male. They are cylindrical, recurved and thick set with short, light-colored hairs. The first two joints are shorter and thicker than the others. The succeeding joints are close together, equal and cylindrical, except the last, which is longer and conical. The abdomen is lanceolate and all the joints are freely movable, so that this organ can be bent abruptly down, or even beneath the body. The venation of the wings (Fig. 3) is simple and the first discoidal cell is incomplete. This parasite belongs to the family Braconidæ as is shown by the simple venation of the wings. We also see that it belongs to the genus Aphidius; as the discoidal cell is incomplete, the abdomen is lanceolate, the antennæ sixteen or seventeen jointed, and the ventral valves of the abdomen in the female simple. It differs from *A. Avenaphis*, Fitch (see New York Report, Vol. 6, p. 98) which we also find here working side by side with this new species, but in far less numbers, in the following respects: It has sixteen or seventeen jointed instead of nineteen or twenty jointed antennæ. The color is yellowish brown instead of honey yellow. The first two joints of the antennæ, the pedicel of the abdomen, and a spot on the suture between the second and third joints of the abdomen are honey yellow in *S. Avenaphis*, while all are black in this species. The joints of the antennæ are closer set; less pedicelated in this species than in *A. Avenaphis*.

Silos, Ensilage and Silage, by Dr. M. Miles.

This masterly treatise is no surprise to any of the old pupils of the author, for in it they see the same scientific ability, power of research, and genius at generalization, that made him a favorite and revered teacher. Such a work as this at once refutes the assertion, sometimes made, that it is difficult to make agricultural topics interesting to our students. Once vivify such themes by a broad basis of scientific facts, and surround them with that research and acumen that brings to bear all the best that is known in this and all other countries; and the enthusi-

asm of students will be raised to the highest pitch. Indeed it is only to the student that such a treatise will bring the best fruit, only by the student that it will receive its full appreciation.

In the first two chapters, the evolution of the silo is explained. Pliny is quoted as describing how grain is preserved by burying. Thus grain could be kept from insects, and preserved from years of plenty to times of famine. Next we are shown how roots were pulped and mixed with dry cut straw and grain, firstly to furnish succulent food; secondly to make dry straw palatable and digestible; and thirdly to utilize grain which otherwise is often passed undigested, and so lost.

The author shows that M. Auguste Goffart was not the first to practice and describe this method of preserving green food. Even before 1842 under-ground silos were successfully used in Germany. It was not till 1870 that the method was made available in France.

The use of maize or Indian corn for silage originated with Herr Adolph Reihlen of Stuttgart, who had previously preserved beet leaves in silos.

In 1875 Dr. Miles made silos by digging pits, and in the *Country Gentleman* Oct. 5, 1876, he gives an account of what others had done in Germany and France, and the results of his own experiments. He then spoke hopefully of this method of preserving succulent food for winter use.

Dr. Francis Morris of Maryland built a silo in 1876, and published the results of this experience in 1877, the same year that Goffart of France published his book. In the winter of 1878-9 Goffart's work was translated into English and published in New York. Thus it is that Goffart has received the credit as the inventor of the silo, and the discoverer of this method of preserving green food. Goffart's silos of heavy masonry and the rule of heavy weighting have done much to retard progress towards the more inexpensive and desirable methods.

This chapter on fermentation is a thoroughly scientific exposition of the very latest views on this fascinating subject. The theories of Gay, Sussac and Liebig are explained; and the classic experiments of Tyndall and Pasteur are detailed, which at once settled the question as to the true nature of fermentation. Dr. Miles explains the two kinds of fermentation, and gives an admirable exposition of the importance of this subject in biology. It is explained how ferment germs often succumb to the heat that is produced by their own production and development.

The method of constructing a silo is fully described with carefully prepared illustrations. Dr. Miles advises only wood above the ground, and renders the silo air-tight by use of coal tar and pitch, so mixed as to render them easily handled. He urges that all the wood be coated and that the material be put on hot. The advice to only sheet on the inside where the silo is in the barn, is I think mistaken. The double-walled silo is necessary inside as well as out, to protect against frost.

We are glad that Dr. Miles discourages the use of partitions and advises against heavy weighting. Without question this advice is wise. He is also correct in advising that the opening run from base to within two or three feet of the top, and that the door consist of narrow boards to close the opening as filling advances.

Dr. Miles shows that southern corn may not be the most profitable variety for the north. He shows why thick planting is not advisable from the standpoint of both science and practice. In like way it is shown that the corn, which is the most profitable crop for silage, must be permitted to mature in order to give the best results. This not only secures the most but the best food material.

Dr. Miles urges in favor of slow filling, that the silage may be sweet. We know from personal experience that rapid filling will give most excellent silage. While the

silo may be filled slowly if desired, it is just as well to fill rapidly if found more convenient. If the corn is dry when put in and is mature—glazed—and well trodden about the edge, we will guarantee success, whether the filling be slow or rapid. Of course the silo must be air tight and frost proof.

We have no hesitation in saying that this work is the most admirable and complete treatise on this subject ever written. It is plain, comprehensive, scientific and accurate. No farmer can afford to be without a silo, and any one contemplating building a silo should certainly procure and read this admirable treatise. Experience, trained observation and scientific ability makes a strong trio. This admirable work fully proves that this is true.

A. J. Cook.

THE SPECULUM.

PUBLISHED MONTHLY DURING THE COLLEGE YEAR,

BY THE STUDENTS

OF THE MICHIGAN STATE AGRICULTURAL COLLEGE.

TERMS, 75 CENTS A YEAR; SINGLE NUMBERS, 10 CENTS.

ADVERTISING RATES MADE KNOWN ON APPLICATION.

☞All subscriptions will be regarded as continued, unless we are notified to the contrary.

If this item is marked, your subscription is in arrears.

AGRICULTURAL COLLEGE, AUG. 10, 1889.

WITH the liveliest sense of its responsibilty the new Board assumes the task of conducting THE SPECULUM throughout the coming college year. Our earnest desire is that our efforts will be as fruitful as those of each preceding Board. Seven years ago THE SPECULUM was a fourteen-page quarterly wearily struggling for a mere existence; now, thanks to those having had the paper in charge each successive year, it has grown to a monthly with each volume possessing nearly twice the reading matter of the original. Then the subscribers' list scarcely exceeded three hundred, now eight hundred copies will no more than suffice. Then serious doubts as to the future success of the enterprise were entertained by many, even by the Chiefs themselves, as indicated in their editorials; now, the most pessimistic are silent. That the students of the Michigan Agricultural College can edit a paper comparing favorably with any of its exchanges has been fully demonstrated. All are aware and willing to admit that the task of carrying on a paper, in addition to the routine college duties, is no easy one, and for that reason we beg that our mistakes and shortcomings may be criticised with kindly magnanimity. However, should our work fall below the standard, we are determined that our failure shall not be attributable to a lack of earnest, conscientious effort.

WE wish respectfully to call the attention of many of our readers, especially the Alumni, to the fact that they are behind on their subscriptions. The financial support of THE SPECULUM depends greatly upon the Alumni, and right nobly have they extended assistance; but at present there are many who, no doubt because of carelessness or engrossing occupations, have failed to keep a balance in their favor upon the Business Manager's account book. All students and Alumni are interested in transactions taking place around their Alma Mater, and for that reason cannot afford to dispense with THE SPECULUM. We beg, therefore, that those receiving notices from the Manager, or finding the article at the head of this department marked, will forward their money, renew their subscription and accept our thanks.

FACULTY meetings took place with such frequency during the first weeks of July as to puzzle one not acquainted with the business on hand, but that these conferences have been fraught with serious measures, chapel announcements clearly attest.

Going back but a quarter of a century we find every conceivable form of hazing in popular vogue in our colleges. Nor was this practice confined to the lower grades of educational institutions, but we shall find colleges whose reputation for efficient instruction was world-wide, alike disgraced by these cowardly actions of their students. Owing, however, to rigid measures on the part of faculties and the extreme unpopularity in which perpetrators of such jokes found themselves, personal abuse of this sort has gradually fallen into disuse. Hazing in this college has been nearly extinct for four or five years; but to the humiliation and disgust of all rule-observing students, an affair took place one Friday night not long since in which a lower classman, already ill, was thrown into nervous paroxysms from which he did not recover for several days. By action of the faculty one participant has been expelled, two suspended (one for two years, the other for one), while two have received public and several private reprimands. Though it is a debatable question whether or not this sentence in some cases is too severe, this much is certain: the young men who thus commit offenses whereby the whole college is brought under reproach, are deserving of summary punishment.

MILITARY drill this term, so far as hour and amount is concerned, has been about as unsatisfactory as it well could be. It has taken place immediately after supper, 6.30 o'clock, and the results have been most annoying. Coming directly from the exertions of drill cadets are heated, excited, and consequently indisposed to study when the study bell rings. Two-thirds of the petty disturbances within the dormitories are directly chargeable to the fact that our drill has been at an unsuitable hour. Again, if drill is to be compulsory, we should have it more than three hours per week. This small amount of time does not give one an opportunity of becoming at all proficient in military tactics and science, and if we are not to make a success of it, the time thus spent could be put to a better advantage. Students have not taken the interest in drill that they would have taken had the time devoted to it been five hours each week instead of three.

ON the first day of July last the State Board of Agriculture, at a meeting held on the College grounds, investigated the long-continued trouble between Prof. Johnson, on the one hand, and the students and faculty on the other. At that investigation the students who were called in were examined by Prof. Johnson and Dr. Kedzie, the latter acting in behalf of the faculty. But one result was possible from an impartial inquiry: the Board decided that for the best interests of the College, the professor ought to resign, and accordingly asked for his resignation. Since that time Prof. Johnson and his friends have filled the papers with assertions and criminations against the students and faculty, which, were their authors called upon to substantiate, they would find themselves beyond their depth.

Because Prof. Johnson was not allowed the presence of a certain "friend" at the investigation, it is claimed that, therefore, the Professor has been unfairly treated. Was the investigation held for the purpose of allowing a lawyer to dodge the truth through the alleys of legal technicalities? or was its aim, rather, to arrive at the facts of the case? Besides, the Board considered themselves perfectly capable of sifting the evidence without the aid of a lawyer.

Again, Professor Johnson proceeds to strike at the students' petition to Governor Luce in an "analysis," which, after due

boiling presents nothing but assertions impossible for him to prove and having no foundation. His declaration that lower classmen were bulldozed into signing that petition is only one of the many curious statements he seems to consider himself called upon to make. Students were *not* jeered when refusing to put their names to the petition; that no pressure was brought to bear and that the young men were allowed to act as they saw fit those who circulated the petition are ready to attest.

When a member of the freshman class indignantly denied the accusation against the independency of himself and his fellows, Professor Johnson attempts to show by epitheting the article as "fresh" and by reference to its anonymous character that a lower classman is not its author. However, when a day or two following, the writer declared his identity in an article over his signature, no chance for doubt was left.

Much stress has been laid upon the supposed spurious character of the college news appearing in one of the Lansing papers. Do Professor Johnson and his friend, the editor of the "Farmer," remember how the latter obtained the matter for his version of the trouble? Have they forgotten that, while here on the College grounds, the editor was the guest of the Professor and from him learned the correct (?) state of affairs.

We are sensible of the fact that these writings have produced a feeling of antipathy against the students and the faculty; a conviction that Professor Johnson has been shamefully maltreated; a fear that there exists a determination to cut from the College its greatest and distinguishing feature, the department of agriculture. Every effort has been made to belittle us, to misrepresent us, to hold us up as rioters and "breeders of sedition," but we are confident that an investigation into the facts will show how erroneous are the impressions received thereby, and that, in spite of Professor Johnson's statement to the contrary, the good order of the College has been greatly due to the efforts of its students.

JUST before taking our material to the printer we are in receipt of the following:

"FOR THE SPECULUM.

"MR. EDITOR, Dear Sir.:—

"I am very sorry indeed that the M. A. C. boys have insisted on a change in the Prof. of Agriculture. Prof. Johnson was a kind, able and efficient teacher; also a thorough, practical farmer. The reasons assigned for his resignation are in my opinion not the real ones.

"Prof. Johnson has been requested to resign simply because he has stamina (or backbone) enough to enforce the rules of the college. In short, his resignation was caused simply on account of his 'docking the boys.' The boys dislike very much to work on the farm, especially at ditching, and because Prof. Johnson will not pay them for sitting under a shade tree, or in a fence corner, or robbing a neighbor's orchard, etc., he is to be ousted. Prof. Johnson has been too lenient. He removed, or caused to be removed the stigma of laziness from where it rightfully belongs.

"Because Professor Johnson has stamina enough to enforce the 'docking rule' is the very reason why he should be kept in that position. The farmers of Michigan prefer usefulness to idleness, and any boy that will not work ought to be docked, and the Professor that does it ought to be supported by the State Board of Agriculture.

"Yours respectfully,

"CHAS. MCDIARMID, Class '84.

"Bear Lake, Manistee Co., Mich."

Our comment will be brief. The letter exposes its own infirmities. It is a fair sample of the not only childish, but wishy-washy, articles by which many of Prof. Johnson's friends are striving to bolster him up.

COLLEGE NEWS.

Club F. vs. Toothpicks.

Pres. Clute's family have arrived.

Lewis Reynolds has been quite sick.

The steps of Wells Hall are being repaired.

Tennis and base ball have become a mania.

A new tennis court is seen by the Engine house.

Prof. King, of Olivet, was on the grounds July 10.

Why don't the Seniors brace up and have a class-day?

The new Annual Catalogue will be out in a few days.

L. A. Bregger, '88, was at the College over Sunday, July 7.

C. J. Strang, of Lansing, was on the grounds recently.

Lieut. Simpson and wife have been entertaining friends.

Each of the mechanical seniors is busy working up a thesis.

Miss Mamie McLouth, '89, was at the College July 18 and 19.

A. B. Goodwin, '88, was on the grounds over Sunday, Aug. 4.

The mother and sister of Secretary Reynolds' wife are visiting here.

Mr. D. Strange, '67, of Grand Ledge, will lecture in the chapel Wed., August 14.

About fifty volumes of magazines have been sent from the library to the bindery.

Dr. R. C. Kedzie paid a visit to the Grayling experment station, returning July 25.

W. A. Morse, '85, from Middleville, was here Aug. 5, bringing a student with him.

Several horticultural reports from different states have been received at the library.

Mr. H. T. French has gone to begin his work in the Agricultural College of Oregon.

A new *Manvel* windmill takes the place of the one blown down by the wind of July 28.

Mrs. C. L. Crandall and daughter started for Harbor Springs, July 22, for a vacation.

J. H. F. Mullett and K. L. Butterfield returned from the Northfield conference the 15th ult.

A 50-candescent light dynamo is being built in the mechanical shops to light the shops and library.

A movement is on foot to bring drill and all parts of the military course under the marking system.

On July 8, Dr. Beal returned from the Grayling experiment station. He reports everything well.

The Union Literary Society banquet in club D; Olympic in club A, and Phi Delta Theta in club B.

What! Is there going to be another *Mrs.* in Howard Terrace? Well, Lyster, you have our congratulations.

Students in the botanical department are getting specimens, drawings and photographs ready for the fair.

John Petrie, principal of the Brockway Centre schools, spent a few days with his brother, William Petrie.

The brass foundry in connection with the mechanical shops is in operation under the supervision of J. H. Freeman.

L. F. Kinney, professor of horticulture in the Rhode Island experiment station, was the guest of Prof. Taft lately.

Ex-Pres. Abbot spent Sunday, Aug, 4, with Pres. Clute. Although feeble, he is able with assistance to get around.

Prof. Cook will deliver a lecture on "Insect Work and Remedies" at the Farmers' Picnic, Aug. 18 at Pleasant Lake.

The superintendent of the schools at Dowagiac, Mr. J. R. Miller, recently returned, after specializing chemistry here.

Mr. W. P. Bowen, instructor in mathematics in the Normal, spent three weeks in special work in chemistry at the College.

Dr. Mayo returned July 2 from Chicago, where he had been on veterinary business connected with the experiment station.

Mr. D. F. Wilson, a graduate of the Normal and principal of the Napoleon schools, is taking a special course in chemistry.

Prof. Taft read a paper on *Cross Fertilization* at the meeting of the Horticultural Society, July 23 and 24, at Devil's Lake, Lewawee Co.

Four societies have elected officers as follows:

Phi Delta Theta—President, J. H. F. Mullett; Secretary, Dean Park; Treasurer, V. H. Lowe.

Olympic—President, L. W. Spaulding; vice President, H. Z. Ward; Secretary, W. Paddock; Treasurer, C. F. Cook.

Union Literary—President, Chas. Ferris; vice-President, A. F. Gordon; Secretary, Chas. Angell; Treasurer, A. F. Kneen.

Eclectic—President, H. L. Bunnell; vice-President, H. H. Doty; Secretary, G. C Monroe; Treasurer, B. O. Johnson; Marshal, B. W. Peet.

Four commencement programmes of the society banquets will be as follows:

Eclectic—President's address, Alex Moore; statistics, S. K. Boyd; prophecy, C. P. Hulburd; society paper, L. W. Rice; toast master, W. W. Morrison.

Phi Delta Theta—President's address, R. S. Baker; history, J. R. McColl: society paper, O. J. Root; oration, C. F. Baker; prophecy, V. H. Lowe; W. L. Simpson, toast master.

Union Literary—President's address, J. W. O'Bannon; oration, J. W. Earle; history, T. F. McGrath; poem, W. S. Palmer; prophecy, W. Babcock, Jr.; toast master, R. J. Cleland.

Olympic—President's address, L. Churchill; history, E. A. Holden; guitar solo, W. Paddock; oration, A. L. Marhoff; poem, L. A. Clinton; prophecy, L. W. Spaulding; toast master, H. A. Martin.

The mechanical club has been reorganized. and from the interest shown at the last meeting, is on good footing. The following programme was rendered July 12: How tin is made, Thos. Bradford; American mills, G. J. Jenks; Measuring machines, Prof. Durand; Wood turning, W. G. Steward; Fatigue of metals, Wm. Petrie; Construction of dams, Chas. Stone; Biography of Descartes, Fred Goodenough; Uses of aluminum, O. J. Root. Discussions followed the papers and many interesting points were brought out.

R. H. and A. W. Stanley have left for Connecticut. R. H. will perhaps return at the opening of the fall term

College hall is much improved in looks by the newly arched windows and other repairs which it is undergoing.

The seniors were given a reception by Sec. Reynolds on Friday evening, Aug. 2. A very enjoyable time is reported.

The name of F. E. Stronp appears in the list of summer students He is a graduate of the Normal and principal of the Tawas City schools

Drs. Kedzie and Beal and Prof. Cook will attend the American Association for Advancement of Science, which meets this year in Toronto, Aug. 28.

Miss Moore from Shelton, Conn. has been visiting her cousin, Mrs. Durand, since July 4. She and Miss Smith will go east together after commencement.

A meeting of the Experiment Station entomologists is called at Toronto, Ontario, Aug 22. Prof. Cook will represent the Agricultural College at the meeting.

Mr. J. M. Aldrich, a graduate of the Dakota Agricultural College and now assistant entomologist of that institution, will study with Prof. Cook this winter.

T. R. McClure, originally of '89, is temporarily filling the position of librarian, left vacant by the resignation of Miss Abbot. He will enter college again next fall.

The Lapeer High School is represented in our summer school by Miss Emma Loughname a graduate of the Normal, who is taking a special course in chemistry.

Pres. Clute has manifested his interest in agriculture by joining the Capitol Grange. He speaks before a Grange picnic held at Mr. Foster's of Williamston, Aug. 9.

A new large museum case has just been completed for the family *Cervidæ* which will about fill it. Also, numerous stands are being made to remount many specimens.

The *Delta* along the river contains about one hundred kinds of grasses and forage plants. Some of the seeds sown last September are scarcely out of the ground yet.

The Horticultural department promises to be well represented in apples, pears, grapes, potatoes, tomatoes, cabbages, squashes, onions, and celery at the coming state fair.

Prof. Cook's bulletin No. 51 is out and treats of the enemies of the plant louse which has done so much damage in this state. One new species of *Braconid* parasite is described.

The Association for the Advancement of Agricultural Science, of which Dr. Kedzie is President, meets in Toronto, Aug. 26. Dr. Beale and Prof. Cook are also members and will attend.

The Junior class-day at Grand Ledge was an event of the 26th ult. The pleasures of the boating, banquet, toasts, and ball room furnished enjoyment not soon to be forgotten by all participants.

The Y. M. C. A. is getting out a hand book containing a map of the grounds and all sorts of general information concerning the College. It will be issued in time for use by the incoming students.

Seneca Taylor, a lawyer of St. Louis, Mo. who was probably the first student that ever entered the M. A. C., as he came here three weeks before the first term opened, spent Aug. 1st visiting the College.

The ground for the bath house has been broken and work begun. It will be a building 16x30 ft. and will have twelve plunge bath tubs. The building will be situated about thirty feet east of the boiler house.

The stewards in the boarding clubs for next term are as follows: Club "A," J. H. Freeman; club "B," C. E. Bowen; club "C," H. H. Doty; club "D," H. L. Bunnell; club "E," Chas. Ferris; club "F," H. Z. Ward.

Eaton County Horticultural Society had an excursion to the College Aug. 7. About 300 were present, and reports of all departments were looked up by special committees, who will present them at some future meeting.

Dr. M. Wilchens, professor of Agriculture in the school of Vienna, Austria, spent a few days at the college. He is making a tour of American agricultural colleges, (this being the tenth he has visited), to learn American methods.

Mrs. Ella Kedzie, who has charge of the Art department at Olivet. and her sister, Miss Hattie Gale, a graduate of the Kansas Agricultural College, together with Mrs. Nellie Kedzie, professor of Domestic Economy at the Kansas Agricultural College, are the guests of Dr. and Mrs. Kedzie.

The programme of exercises for commencement time will be as follows: Olympic, Eclectic and Delta Tau Delta banquets, Friday Eve.; Baccalaureate address, Sunday at 2:30 P. M.; Union Literary Society and Phi Delta Theta banquets, Monday Eve.; Commencement exercises, Tuesday, 10 A. M.; Inaugural address, Tuesday, 3 P. M.; President's reception, Tuesday 7 to 10 P. M.

The new Agricultural College "Triennial," is receiving compliments from all quarters. Its freedom from errors throws great credit on the work of Prof. F. S. Kedzie. It contains the names, addresses and occupations of all living Alumni, and the names and dates of deaths of those who are dead. It also contains a list of those who have been officers at the College, together with other information.

The resignation of Prof. Johnson was accepted at the meeting of the State Board, Aug. 6. Prof. Pattengill assistant in English Literature, more prominently known as editor and publisher of the Michigan School Moderator was asked to resign on account of an editorial he had in his paper concerning Prof. MacEwen's dismissal. The department of English Literature has been made the department of English Literature and Modern Languages and Prof. Edward P. Anderson

of the Ohio University at Athens, has been called to succeed Prof. MacEwan. A separate department, as that of Physics, has been created, with P. B. Woodworth as assistant professor.

Dr. Beal's report of the experiment station work contains some very interesting items. The dry weather so far has been very adverse to the success of grass and forage crops. Grape vines made but feeble growth and were winter killed, while neither Alfalfa nor June grass are promising A difference is manifested between plants of the same branch. Mammoth clover does better than red; especially when fertilized by superphosphates, *Fescue* has succeeded better than timothy; the Russian trees are more promising than our natives; strawberries do very well. One general conclusion is reached that the old worn-out land is of little value without fertilizers.

The union meeting of the societies took place in the chapel July 19. The following interesting programme was enjoyed by all: Parody, R. H. Stanley; Characterization of Helen Hunt Jackson, D. A. Garfield; Descriptive essay—Northfield, K. L. Butterfield; Declamation, C. T. Baldwin; Debate—Resolved, That Ex-Presidents should be made U. S. Senators for life. Affirmative, H. L. Bunnell; Negative, W. G. Steward; Prophecy of the class of '89, R. S. Baker; Poem—A Hero of the Comemaugh Valley, W. S. Palmer; Oration—Patriotism no substitute for Christianity, William Lightbody; College paper, Lemuel Churchill; Reverie, Frank Paine. Music was furnished by the glee club.

PERSONALS.

We desire the earnest co-opertion of every person who has ever been connected with the college in trying to make this department an interesting one. Let every alumnus and every person who has been with classes here send in news to the editor of this department, often, thus making his work much easier and the department more interesting to all.

What the Class of '89 Will do.

H. A. Stewart will farm.

H. A. Martin will study law.

L. W. Rice will work in a hotel.

R. H. Wilson is going to work on the farm.

O. C. Hollister says he will work at his trade.

Geo. L. Chase will work in a bank in Detroit.

A. D. Baker will work in an office at Lansing.

H. E. Weed will make a specialty of entomology.

Will Curtis does not know as yet what he will do.

F. M. Seibert will study medicine at the University.

C. H. Todd will go home on his father's stock farm.

G. J. Jenks will engage in some mercantile pursuit.

E. J. Lodeman says, "Don't ask me for a few days yet."

F. M. Paine will assist Mr. Knapper in the greenhouse.

A. G. Wilson intends studying medicine at the University.

A. L. Marhoff will survey either near his home or in the West.

W. L. Rossman will teach one year and will then study law.

G. C. Davis will make a specialty of botany and entomology.

J. W. Earle and W. E. Rohnert contemplate going to Australia.

W. E. Davis is undecided—says he thinks he will do something.

D. A. Garfield expects to go to Chicago in a commission office.

W. S. Palmer will farm for a short time. Expects to get married soon.

J. W. Toumey will take a trip up north and will teach next winter.

F. J. Niswander is at sea as yet. We think he will stay with Prof. Cook.

Thos. McGrath thinks he will teach next winter, further he is not certain.

G. L. Flower will go into a machine shop as apprentice draughtsman.

L. A. Clinton expects to stay at home for awhile. He will then study law.

Yeiji Ekeda will attend some college in the East. Does not know which yet.

Lemuel Churchill will begin studying medicine at the University in September.

W. H. VanDevort will rest next winter and go into a machine shop in the spring.

Rolla J. Cleland will study law before a great while. He wishes to rest awhile first.

F. N. Clark will either work in a railroad office at Harrison or at home on the farm.

R. S. Baker will work for awhile at home in a store. Will study law at some future time.

J. W. O'Bannon will go home for a short time, after which he will study law at the University.

Wm. Lightbody will go home for the present and will probably study law in the near future.

Birtley K. Canfield says he will study art in New York or Europe until he gets it down fine.

E. Pagelson will continue in his present position as professor of drawing at the South Dakota Agricultural College.

David Anderson will remain at the college as assistant in the Horticultural Department of the Experimental Station.

W. J. Meyers will hold his present position until the year is finished when he intends returning to M. A. C. to study again.

Alexander Moore will work at carpenter trade for one year with the exception of next winter, when he expects to teach.

Mary Smith will visit her sister. Mrs. L. H. Bailey, at Cornell for a year. Says studies are done for awhile when she graduates.

The Holden brothers are undecided as yet what they will do. Either, they will go from here to the State Normal or home on the farm.

O. J. Root is undecided. He may go into some machine shop or into the hardware business. He will go East for a short time after graduation.

G. L. Flower, D. A. Garfield, F. M. Seibert and W. H. VanDevort will be among the number who go around the lakes in the boat, The Iota, now nearly finished.

'61.

L. V. Beebe says that the last time he was on the grounds he was lonesome, "Not a person there that I knew—not a building, save one, that I recognized." He speaks of the times when he with "Big Allen, Bob Bagley, Doc Hollister, Dickey, the Clutes and others chopped the timber, dug the stumps and the ditches all for from seven to ten cents an hour." He is at present life insurance agent on the road, east and west, and letters will reach him at Utica, N. Y.

'67.

A. C. Prutzman manufacturer, Three Rivers, Mich. was on the grounds during the first of the term for the first time in twenty years.

'68.

Frank S. Burton lobbied for the Rhines's voting machine last winter in Lansing.

'69.

James Satterlee was recently appointed assistant secretary of State Agricultural Society at New York, and has moved to Albany.

'71.

E. B. Fairfield is special agent of the N. W. Mutual Life Insurance Co., Grand Rapids, Mich. He was on the grounds a few days ago.

B. D. Halsted, professor of botany at Rutgers College, New Brunswick, N. J., says, "I do not care to be without The Speculum."

Prof. E. M. Shelton, who has been professor of agriculture in the Kansas Agricultural College, has been appointed secretary of agriculture to one of the provinces of Australia. This is an honorable as well as a profitable position. The secretary of agriculture was asked to send the best man in the country and he chose E. M. His salary will be $3,750 per year.

'74.

Wm. Cook is a member of Constitutional Convention of Montana.

'75.

Albert A. Crane is banker and lawyer in Gaylord, Mich. He is also president of that village.

O. E. Angstman, successful lawyer of Detroit, addressed the Y. M. C. A., at the college Sunday July 28. Subject: "Trial of Pontius Pilate."

'76.

J. E. Taylor is a successful farmer at Greenville, Mich,

Donald H. Kedzie is aspiring to be postmaster in Lordsburg, New Mexico. May success crown your efforts, Donald.

'77.

Success is attending Mason W. Gray as physician and health officer at Pontiac, Mich.

Chas. Bloodgood is physician at Kalamazoo.

'78.

J. S. Pardee is a successful physician in Three Oaks.

C. C. Georgeson is professor of horticulture in the Imperial College of Agriculture, Tokio, Japan.

W. K. Prudden, real estate dealer and breeder of fine horses, Lansing, Mich., while riding in one of the Owosso races was thrown from his sulky and somewhat injured. Let some one else ride the sulky, Will.

'79.

L. G. Carpenter and wife are as happy as can be. It is a boy born July 9.

O. P. Gulley is farming at Dearborn,

WITH '79.

B. H. Dyckman is a restaurant keeper at St. Louis, Missouri.

'80.

F. A. Gulley, director of Experimental Station, College Station, Texas. Started a few days ago for Europe. Henry Haigh, of '74, who is his brother-in-law, accompanies him. They will examine several European Experiment Stations, as well as travel.

'81.

W. R. Hubbert is physician and druggist at Michigan City, Dakota.

W. G. Simonson, attorney at law, Alliance, Neb. Is also mayor of the city.

A. H. Voigt, furniture dealer, Los Angeles, California, writes: "I will introduce to my friends A. H. Voigt, Jr., born May 21st, and I am now looking forward to the time when he may be a familiar person on the M. A. C. campus. No doubt by that time ladies will have first-class accommodations there; and in such an event my young hopeful may be accompanied by his sister two years his senior."

'82.

J. H. Irish, prosecuting attorney of Becker Co., Detroit, Minn., was on the grounds recently.

G. W. Thompson, lawyer, Minneapolis, Minn., in 1887 had an attack of typhoid fever. Erysipelas set in after the fever and resulted in the loss of the use of his left arm. He was married in the fall of 1888.

WITH '82.

E. W. Crofts is farming near Grass Lake, Mich.

A. S. Osborn is teacher of penmanship and bookkeeper in the Business College at Rochester, N. Y. He is also contributor to the Buffalo Business Educator.

'83.

J. N. Smith has resigned his position as superintendent of the Durango, Colorado, schools in order to accept a much better position in the Chicago schools. He henceforth will make that city his home.

WITH '83.

E. D. Hutton is clerk of the Third National Bank, Detroit, Mich.

W. H. Bristol is attorney at law and planter at Shreveport, Louisiana.

'84.

Homer D. Luce now occupies the former store of Franklin Wells, Lansing, as druggist.

C. E. Smith is superintendent of schools at Schoolcraft, Mich., and also member of the Kalamazoo county board of examiners.

WITH '84.

D. J. Gillam is fire insurance agent, Lansing Mich.

'85.

C. H. Hoyt is farming at Irving, Mich.

Robt. W. Hemphill, jr., is paying teller, Dime Savings Bank, 118 Cass ave., Detroit, Mich.

E. R. Lake, Prof. of Botany and Horticulture at the Oregon State Agricultural College, is spending his summer on the Pacific coast.

'86.

Harry B. Howe is on his father's farm at Buchanan, Mich. He says he would like to visit us for a few days and play a game of ball with us.

The following is taken from the Detroit Evening News: "The case of the People vs. Goodrich for murder at Frankfort ended to day. E. A. Whitney, attorney for defendant, made a very able and eloquent argument which failed not to carry conviction. The jury were out twenty minutes and brought in a ver dict of 'not guilty.'"

WITH '86.

Kizo Tamari is Prof. of Agriculture in the Imperial College of Agriculture, Tokio, Japan.

Will Welch is traveling for a wholesale tobacco establishment. He is a fine salesman.

'87.

E. A. Burnett, who is farming at Bancroft, Mich., was on the grounds a short time ago.

The following was clipped from the letter of a graduate now in Frankfort: "H. L. Chapin recently paid me a visit. He had just finished a three month's contract on the Ann Arbor railroad and was on his way to his home in St. Ignace.

C. L. Himebaugh, farmer and teacher at Burr Oak, Mich. is author and publisher of Himebaugh's Examination Register.

C. E. St. Johns, instructor of chemistry in the State Normal, was on the grounds a short time ago.

Mary L. Carpenter taught last winter and is now staying at home in Orion. She will be present at commencement, the guest of Miss Jessie Beal.

Alumni, imagine G. L. Teller, who is now assistant in chemistry, trying to ride on a low safety bicycle. However, it is George's way, "he gets there just the same."

Mary L. Harrison is nurse at Harper's Hospital, Detroit, Mich. She will have a vacation for a few weeks, during which time she will be present at commencement.

WITH '89.

Geo. L. Foot is teaching a Sunday-school class at his home in Indiana. He says crops are good.

WITH '90.

James W. Campbell and mother have gone to California.

H. D. Robson is helping his father in a drug store at Williamston, Mich.

E. A. Prickett is attending Business College at Indianapolis, Ind.

G. F. Bristol has been working with a surveying party locating an extension of the C. & W. M. railroad from Baldwin to Traverse City.

F. B. Plimpton is teaching school and at the same time studying law at Benton Harbor, his home.

Miss Ella Taylor, who is at home, at present, expects to go to Indiana soon for an extended visit.

Daisy Champion, who has been teaching in Ohio for nearly a year, is now enjoying a vacation at home. She whipped seven boys in three days. She leaves a fine record as a teacher.

Nellie McCurdy is teaching near the college.

COLLEGES.

The Yale-Harvard eight oared race for 1889 was won by Yale College.

Cornell University has graduated a class of nineteen in journalism.

The president of the Pekin University is translating Shakespeare's works into Chinese.

Henry O. Sage, of Ithaca, N. Y., has given $300,000 to the Cornell library.

A funeral was held over the remains of the class excuses, archives, and "ponies" of the graduating class at the University of Wisconsin.

All of the Justices of the Supreme Court of the United States are college graduates, except Justice Miller, who graduated from a medical school.

ATHLETICS.

The gymnasium has been much improved lately by the addition of new apparatus, consisting of chest expanding machines, a whirligig and other things of less importance. The gymnasium is now very thoroughly equipped and should receive great attention from the students.

During July the second nine had a series of games in which they were more successful than the first nine. They have won four out of five games played. On the fourth of July they won from Fowlerville and Williamston. Since then they defeated the Reform School nine and a nine at Eagle. The only game lost was with the Reform School boys.

The seniors and alumni had their annual ball game on the grounds July 27th, the seniors being victorious by a score of fourteen to nineteen. The features of the game were the home run by Hollister and the numerous cases of erratic judgment on both sides, at the bat as well as in the field. The following is the score by innings.

	1	2	3	4	5	6	7	8	9	R	BH	E
Alumni.....	1	4	0	1	0	2	3	1	1	14	12	10
Seniors.....	3	2	0	5	1	2	3	3	*	19	16	9