

THE SPECULUM.

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Those Who Leave Us.

No environment is so conducive to a healthy development of soul, mind and body, in an American youngster as the pure air, healthy exercise and wholesome moral atmosphere of a typical rural home such as are found in that garden of the world, southern Michigan.

It was into one of the best of these homes that the subject of this sketch was born in the year 1868. His parents had removed from Western New York to a farm on the Moscow Plains in Hillsdale county, many years before, and had made a good home in which to bring up their children, in an intelligent, progressive and successful community, where the church and the district school were building up the strong mental and moral fiber of the young.

It was in one of these district schools that Fred B. Mumford received the beginnings of his education. Later he went to the high school in the neighboring village of Hanover, and upon graduation went to Albion where he remained three years, taking the Latin scientific course.

But the superior advantages of M. A.

C. lured him in the middle of his course, from the college he was attending to the halls of this institution. Here he was graduated with an exceptionally high record in 1890.

From the college he returned directly to the farm, but his teachers had become impressed with his qualities, and as soon

as a vacancy occurred in the farm department, he was called back to fill it. This was in 1891.

Two years later he was promoted to the Assistant Professorship of Agriculture in recognition of the excellence of the work as assistant in the department.

Almost from the beginning of his connection with the college, Mr. Mumford was a controlling factor in the management of student labor. He has solved the many perplexing and difficult problems that have arisen from time to time

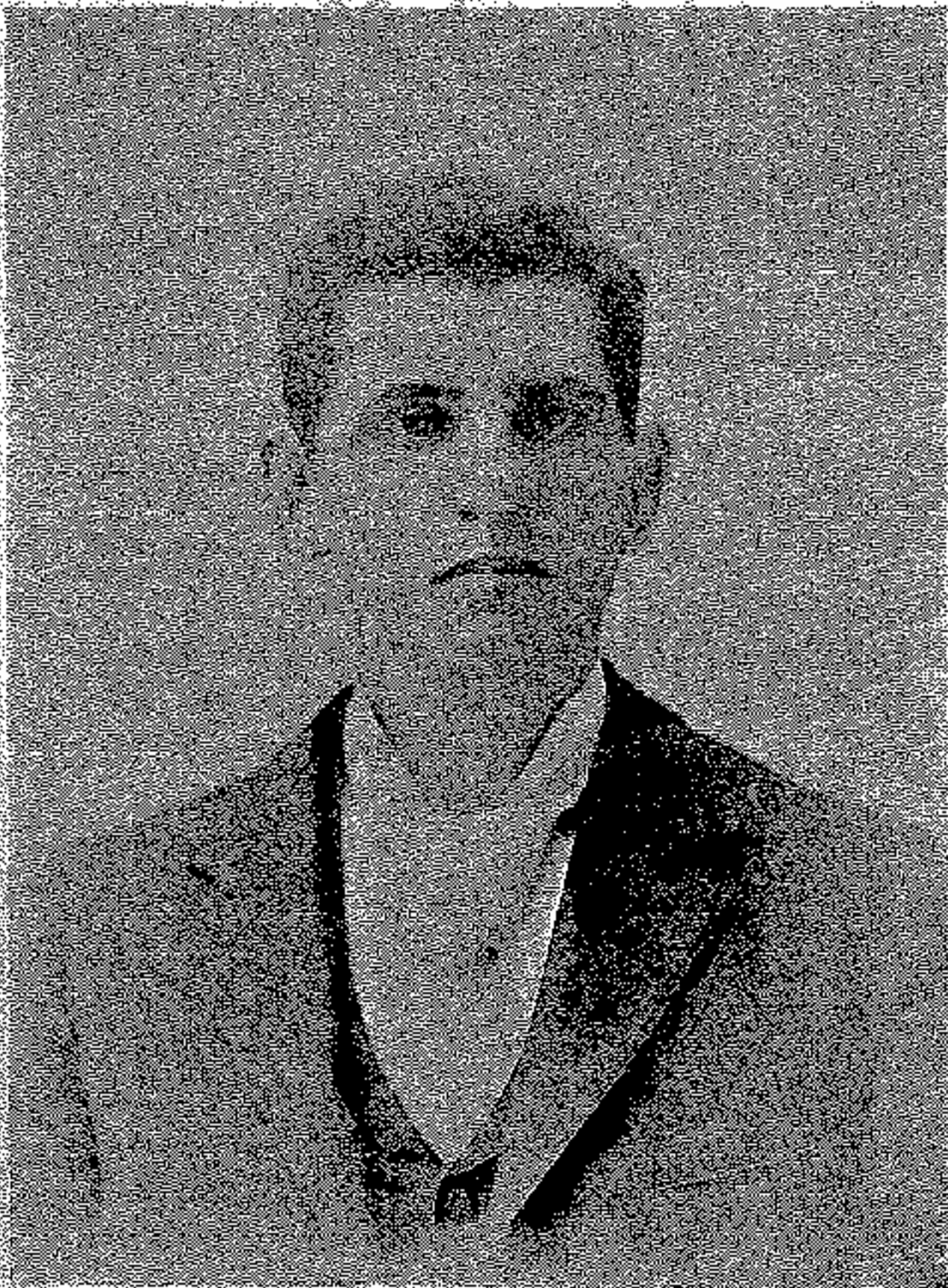
with skill and ability.

As a lecturer in the class-room and on the institute platform, he has won the most marked success, by his earnestness and enthusiasm as well as by his thorough acquaintance with the subjects discussed.

In recognition of his work in the station, and in regular course the college



FRED B. MUMFORD.



A. T. STEVENS.

granted him the degree of Master of Science in 1894.

Very recently the University of Missouri has been looking for a man to build up the agriculture of that State by teaching the subject in the college, by work on the institute platform and through the current agricultural press. The vacancy had existed for a long time and diligent search was made for the right man in all parts of the country. The board made no mistake when they selected Mr. Mumford for the place. His going will be a distinct loss to this college, and his work in Missouri is sure to be of a kind to bring honor to that college and credit to the professor himself. S.

The resignation of Mr. Stevens from a position he has filled with so much efficiency for two years, leaves a vacancy that will be hard to fill. He has had an important part to play, in the management

of student labor, and in the practical execution of the experiments. His whole work has been characterized by unusual energy and industry.

Mr. Stevens was born in the township of Alaieton, and has, for his whole life, been a resident of Ingham county. He received his early education in the district schools, and from them went to the high school at Mason where he was graduated.

He then returned to the home farm, where he worked summers and taught school winters, as so many men who have risen to prominence have done before him.

After accumulating sufficient funds to warrant the undertaking, he came to M. A. C. in the spring of 1890 and graduated in 1893.

Immediately after graduation he was appointed assistant in the farm department, the position he has since held.



WM. L. ROSSMAN.

On leaving M. A. C., he is to begin the work of teaching agriculture in the south in an institution, where he will be the head of a department, that of agriculture. Here the same perseverance and industry combined with his ability and experience will insure good work and bring credit to himself, to the college he will serve and to his alma mater. S.

William L. Rossman graduated from M. A. C. with the class of '89, with a high rank for scholarship, having shown a particular aptitude in chemistry.

After teaching and working in chemistry in Detroit for a short time, he was appointed Second Assistant Chemist in the Experiment Station. In two years he was promoted to be First Assistant Chemist, which position he held till August 1st, 1895, when he was appointed by Gov. Rich and Dairy, and Food Commissioner C. E. Storrs, as State Analyst and Deputy Commissioner—a place he is well qualified to fill. His friends congratulate him on his promotion, though we shall miss him and his estimable wife from the college campus.

In the Experiment Station he has done very valuable work, both for the college, for the Association of Official Agricultural Chemists, and for the public. With the assistance of H. E. Harrison he has done most of the work required of the State Analyst for two years past.

He will enjoy his \$1,200 salary and will earn every cent of it. R. C. K.

U. P. Hedrick, Assistant in the Horticultural Department, has been elected to the chair of horticulture and botany in the Oregon Agricultural College at Corvallis, and has gone to his new field of labor.

Mr. Hedrick was born in Clinton county, Iowa, but moved with his parents when quite young to Northern Indiana; here he remained until ten years of age, when the family removed to the shores of Little Traverse Bay in Emmet county, Mich. Fortunately, his home was near Harbor Springs, and the privileges of the village school were within reach. Not content with graduating here, he entered M. A. C. with the class '92, stopping out one year and graduating in 1893. After graduation, he took one year's work in floriculture under the efficient instruction of Mr. Gunson. In August, 1894, he succeeded Mr.



ULYSSES P. HEDRICK.

Coryell as assistant in horticulture.

Mr. Hedrick's work has been most earnest and conscientious, and won for him the attention and confidence of those with whom he was associated.

M. A. C. is sorry to part with Mr. Hedrick, but also rejoices that she has such a son to send to the "Sunset Land," confident that her laurels are safe in his hands.

H. P. G.

Agriculture in Transition.

Agriculture remains the largest single factor in the industrial world. It is one of the industries, and as such it must be subject to the disabilities, exigencies and influences of any industry. The same laws govern it. Its commodities must compete; must seek a market, and must run the gantlet of boards of trade and the middle-men, who make their livelihoods in handling and manipulating them. It has some disabilities not common to all. Among these are bulk in products, time to produce, and to a generally larger degree the inclemency of the seasons. The time to make a pair of shoes may be shortened, but revolving suns are necessary for a field of wheat.

On the other hand, it has in its favor to a larger degree, necessity. Men must eat or die. Other industries are more largely sustained by desire for comfort, for luxury. The human want we minister to is exigent, fundamental, can never be disregarded. A barefoot "cad" has an appetite, a daily demand, which gives no peace till satisfied. Men may dispense with many products which make a great clatter and clamor in the world, but they find no substitute for food. Our art is the art sustaining as against the art preserving. The world can get along without the miller and the mill, but the farmer and the farm will abide as long as this globe revolves.

PERMANENCY, STABILITY OF PRICES.

These conditions of disability and necessity bring about two results, to-wit: (1) the permanency of the industry, and (2) the comparative stability of prices. The first will be conceded. The farmer will be a fellow traveler as long as there is a human pathway trodden by a human foot. The world may call him a "clod-hopper," but his company is constant and his association brings life, and his vocation commands respect. He is a permanent institution, amid revolutions, commercial crises, national debts and disorganized society. This will be conceded.

But the other result, a comparative stability of prices, will not so generally be conceded. It is nevertheless true that the farmer is, taking all his products in the range of years, better assured of a stable price for the fruits of his labor, than those who follow other industries. Three things lie behind the price of any commodity: cost, supply and demand. The first is too often ignored in the discussion. The cost of agricultural products has not been subject to the same mutation as other products. As heretofore suggested, *time* is of the essence of agriculture. No labor saving machinery can eliminate it. There is no patent device to ignore nature in her process. In fact, while agriculture owes much to inventive genius, she is far less indebted to it than any other industry. In my recollection it took two pounds of butter to buy one yard of cotton cloth. Now one pound will buy two to five yards. Eliminate the considerations of supply and demand, the cost of production accounts mainly for this change in purchasing power. The spinning jenny has taken the place of the hand spinning, while there has nothing yet quite supplanted the old dash churn. Division of labor has reduced the cost of the cloth, but nothing has yet been devised that dispenses with the farmer's wife, or the daily routine of the dairy. Nimble fingers from constant manipulation of the web and the wool become expert as a machine, while from the time the cows come home at night till the golden product lies on the plate, there is no time or place for such division of labor as shall materially diminish the cost. Therefore, as it is a law of commerce that in the long run no commodity will be sold at less than cost, so the price of butter will not be subject to the same reduction as a yard of cloth.

That the illustration is true in fact, will be considered as we proceed in our discussion.

The point under consideration is the stability of the price for agricultural products. If it be true that the cost of pro-

duction has not been materially lessened as compared with other products, it must follow that the price they will bring will be held up to cost paying standard, or the product will be discontinued then, whatever the cost, it will control the price — other things being equal. In many ways this may be more fully illustrated and its essential verity be established. Conceding all that may be said for labor-saving machinery as applied to agriculture, the points are so many where no such machinery can be successfully used, that the world will never see such a reduction in the price of its products as may be found along the lines of most of the mechanical industries.

Every disability adds to cost, whether it be inherent in the labor itself, or the times, seasons and weather incident to its exercise. The farmer shears his sheep in the old-fashioned way, at the old-time season. There is no short cut to the fleece. Some men are handy, but there are few experts in agriculture compared with the number if the work were continuous. Organized business methods may diminish the incidental expenses, but the net cost of the shearing is almost a fixed quantity and will always be so.

THE TRANSITION.

The situation for this generation is peculiar. While invention as applied to agriculture directly has made less impression than upon the other industries, its indirect influence has been great. Every new invention in the industrial world displaces many laborers, and during the transition, that is, while labor is adjusting itself to the new conditions, there are many remuneratively unemployed, and the perturbation in some lines is so great at times that the whole economic world is almost disorganized. But by taking our bearings we are able to see that in the long run men find new places, and on the whole, obtain better wages on shorter hours and less strain to mind and muscle.

Agriculture has for the last twenty-five years been going through this transition. Steam has shortened distances, and

the cost and terms of transportation have been so reduced that distant regions lie at our very doors, and their products are sharp competitors in our home markets, so sharp as to reduce profits. The virgin soil of the west in many large lines of agricultural productions has been too much for the older settled lands, and our farmers in the east have felt that their occupation was imperiled.

Mr. Willits then proceeded to a very careful discussion of the subject of transportation and the changes it has wrought in the condition of the farmer, followed by some facts on the prices of agricultural products as follows:

PRICES FOR AGRICULTURAL PRODUCTS.

According to the last census, over 37 per cent. of the total population of the United States were engaged in agriculture. The report of the select committee of the United States senate in 1891-2 shows that the average normal family spends about 40 per cent. of its living expense for agricultural products. But this percentage does not show the true relative production of agriculture, as a large block of raw material for other uses than food is to be credited to agriculture, to wit: cotton, wool and tobacco. This report shows further that since 1860 the price of food products have not decreased, but have increased nearly 4%, while clothing has decreased nearly 75%. Butter has increased 28%, eggs 9%, beef 5%, mutton 30%, while flour, pork, lard and corn-meal have diminished, but the average of consumption shows an increase all around of nearly 4%, as before stated.

It will be noted that the agricultural products which show the increase are those which require more hand labor, or which are less affected by labor saving devices, while those, excluding pork and lard, which have the benefit of labor saving machinery, or are susceptible of large combinations, or are produced by wholesale, have declined. Pork and lard have suffered from the same cause, to wit: cotton seed and other substitutes. Man-

kind wants fats in a fair proportion, and a goodly portion will be satisfied with candle grease if cleaned and put up with an attractive label or an appetizing title. There has been a sharp raid on butter, but relatively butter has held its own. There is no satisfactory substitute for it. This is one of the commodities for which people are willing to pay. Good wholesome butter has the right of way with the generations of men, who know the difference between a Jersey heifer and a pump handle. However, it must be good butter. There is a poor market for middling good butter as well as for middling good eggs. Men in the cities will pay readily 25 cents for 25 cent butter, or 40 cents for a 40 cent article. Their gastronomical laboratory rejects the substitutes so hastily that the latter have to take the name and the garb of the genuine. Our dairymen are put upon their mettle, but so long as cream is cream it need fear no competitors.

It will be noted that beef and mutton, for which there are no substitutes, have increased in price, mutton more largely for the spring lamb element. Both have suffered from the wholesale ranges in the west, and the decline on freight rates, but this decline being only 50% they have stood the competition better than wheat where rates have been reduced almost fourfold.

Eastern agriculture has suffered from thousand acre wheat fields and 100,000 herds, but time and the annual cropping will surely drive the thousand acre fields further and further till there will be found an equilibrium which will make eastern wheat, corn, beef and mutton more a staple than they are now.

Then after discussing to some length the effect of steam, electricity and the bicycle, upon the horse and his usefulness Mr. Willits continued:

THE SUPREME TRANSITION.

There is one feature in this transition which I would not ignore on this occasion and in this august assembly, to wit:

the transition to be charged to the farmer himself, to his methods and to his reckless disregard of the most obvious laws of nature. The American farmer has until recently found at ready occupancy a vast region whose fertility is the marvel of history, the product of the ages, and as "cheap as dirt". One-half of the energies of the old world is employed in feeding the soil which supports its teeming population. The refuse of the sea has been gathered, the islands to the ends of the earth have been scraped, the phosphate and nitre beds of distant nations have been despoiled to furnish material which shall put new life into the exhausted soil. So great is the demand, so rapacious has been the search, that to the pessimist the time is not far distant when the world's supply of the world's extraneous fertilizer will have been exhausted, and mankind would disappear amid deserts and sterile wastes.

This extra burden imposed upon agriculture in the old countries has sent to our shores a vast horde, who have captured our virgin country with the rapacity with which the Goths and Vandals took ancient Rome. Here was a soil which produced with spontaneity and a bountifulness which lured the most conservative from the methods of wisdom in which they were raised, and they soon forgot the maxims which experience has demonstrated were the laws of permanent success. They farmed without regard to the future. The soil was exhaustless, and if it were not, there were millions of acres just a little further on waiting for the tramp of the pioneer. It was cheaper to move than to keep up the fertility of the old home. What mattered the sentiment which bade them keep the home acres in joyful heart for the family and its descendants.

We belong to a race which has always been "moving on", till to "move on" has become almost a second nature. The old orchards went to decay, the fields had not verdure enough to keep them from blistering in the sun. Their fertility had been carted off to the market, or had

walked off on the two legs of the men and women it had raised. It costs \$1,000 and the substance of four acres of land to raise a man to maturity. Virginia raised men for the southern shambles and despoiled her acres in doing so. New England sent to the Western Empire a host whose baggage included not only the homely virtues and sturdy habits of its daily life, but the essence of its soil which had been converted into bone and blood and muscle.

THE RESULT.

Five generations of this untoward policy brought the penalty. Rome had to go to the Nile for her corn. New England sought the Mississippi for a like reason. History repeated itself in so short a time that it could hardly be called history. Abandoned farms and decrepit agriculture marked the seashore from Maine to Georgia, from salt water to the foothills of the Alleghanies. Farming did not pay in the east, the fertile unoccupied lands in the west were disappearing, and the dearth of the soil was steadily marching toward the western horizon. Michigan wheatfields which once harvested twenty-five bushels to the acre now turned out ten. Illinois prairies once good for 100 bushels of corn now produced thirty to the acre. The sons and descendants of the hardy pioneer began to complain that farming did not pay, and took to the professions so-called to make a living by their wits. Farming, you know, was not a profession; did not need wit. The occupation was doomed, so thought many; its future hopeless. What was to be done? Agriculture could not cease on the earth. The existence of the race depends upon it. Farming must be made to pay, and some thought could be made to pay. People began to study the causes of its decline and they began to hope and to think that it was only in a

TRANSITION STATE.

But it was the worst transition of all. It was not a question of a market, or of transportation, or of labor-saving devices,

but of production; how to increase production, how to stop deterioration of the soil, how to rejuvenate it. It was manifest that science must be called in to help solve the problem. Farming must be made a profession—intelligence must be joined with skill; book farming must be taken into the catalogue of aids; as literature and history embody the experience of mankind why not call them in for the benefit of agriculture. Periodicals devoted to the vocation began to increase in number and ability; men of science began to investigate and to report "how crops grow", and the whole question took on a more hopeful aspect; a spirit of inquiry ran all along the line and the sentiment grew and grew that there should be men detailed for the constant work of investigation, and that this rehabilitation of agriculture should not be subject to sporadic labors of chance, unorganized individuals, till finally the whole matter became of such national import as to lead to the establishment under national auspices of the Agricultural College and Experiment Station, as the culmination of the spirit of inquiry, as the steeple on the church which holds the body of the workers and believers below.

Then after dwelling to some length upon such institutions and their aims, Mr. Willits concludes as follows:

It is not the purpose of this paper to demonstrate the topic on all points. Its purpose will have been subserved if we are led to a more hopeful view of the situation. While agriculture in its depressed condition is in transition, passing on to better things, all causes for complaint are not in this transition. There will always be difficulties, disabilities and discriminations to overcome or endure. The forty per cent. engaged in agriculture have in the contest for life the sixty per cent. engaged in all the other pursuits in a sense against them. There will be times when it would almost seem that it was to be the "survival of the fittest" only. When the contest comes to that you may lay the flattering unction to your

souls that the farmer will survive. The merchant may go; the banker and the railroad magnate, the speculator, the lawyer, the doctor, all may go, but the farmer will stay, and if he stays, as stay he must, or all go to a common grave, he must have and will have from the rest, or by himself, his living expenses. The first toll on his crop goes for his own grist, and he is false to his nature and his opportunity and resists the injunction of scripture if he does not take it; he is worse than the heathen if he provides not for his own household.

For years it has been claimed by some that agriculture has not paid first cost, that the farmers have not paid expenses. I deny it. There is not a year in which as a whole they have not paid legitimate expenses. But concede the claim for the sake of argument. What vocation has paid expenses for the last two years? All have suffered a like calamity. The earning power of capital has diminished one-third. Money is cheap and has been the idlest loafer in the industrial activity of the world. Everybody has been exhausting his credit, or has been poaching on the reserves of former successes. What reason has the farmer to complain more than others, if he has not made his accustomed profits? Is it because those profits, being relatively less in the fat years, he should be exempt during the lean ones? False logic! The profits were stable. You abated the amount on the security of what you got. You did not go into bankruptcy, as did many who reaped more largely than did you. You took fewer chances, and you are here to-day with a roof over your head, and a larder reasonably well supplied. The mortgage has not been paid perhaps—neither has the other man's. What was the mortgage given for, anyway? Was it because you ran behind in farming, or was it for something else? Men are willing to pay for assurance. You took the premium for yours out of your profits. Young men go cheerfully to West Point, with the assurance that the government will pay them so long as they live at least

\$1,200 a year, and take the chances of being shot in the bargain. An assured income is a fortune. Carlyle makes one of his heroes say:

"The fraction of life can be increased in value not so much by increasing your numerator as by lessening your denominator. Nay, unless my algebra deceive me. Unity itself divided by zero will give infinity. Make thy claim of wages zero, then: thou hast the world under thy feet."

This is aggravating doctrine. The equilibrium is kept by equally reducing your numerator (your income) and your denominator (your expenses.) If Carlyle is right, you want to keep an eye on the denominator; then you are all right; the numerator will take care of itself. If the denominator is in due amount at all times, you have the world under your feet always and forever.

This is hard doctrine for the farmer who is, from his desires, his education and his general practice, simpler in his living expenses than those of other vocations, but to him as well as to us all there is truth in the admonition: keep within your income. There are flush times for us all. They are just ahead of us at this moment. But let us remember that it is during these flush times that the greatest debts and obligations are incurred. One of these obligations is the social status and style of living which is the hardest and the last to cancel. It is harder to step down than to carry a mortgage. One requires pluck, the other sheer strength.

May all of us have the courage and the strength to do what is just right without apology or complaint. Above all with cheerfulness let us insist that agriculture is a noble calling, the noblest of all, the supreme vocation which the world will never see die; let us congratulate ourselves with the reflection that the world is willing to pay in the end, has always paid at least first cost for the products of the farm, and generally concedes a surplus profit, meagre though it be at times, but sufficient to make the vocation the most dignified and independent of them all.

Education of Women.

ORATION DELIVERED BY E. J. HECK, AUG. 12, AT
SENIOR CLASS DAY EXERCISES.

In these days of non-altruism and science, when the great masses of humanity are working with that egotistic spirit for individual supremacy, searching every nook of earth for both the least and the greatest of nature's gifts, we forget that around us there are problems that are at least worthy of a passing glance. At present when this great strife is participated in not only by man, but by woman, those that will *constitute* the individuals of the next generation are forgotten. The fairer one of to-day must master a profession, she forgets that she has someone to teach, someone to guide. The home to her furnishes but an avocation, while her *vocation* is sought in the conflicts of the exterior world. The child is forced into the struggle of life without the guiding principles inspired by a mother's work; without those precepts which are instilled into his being only by the gentleness of a mother's love. As a result, our homes are vomiting forth thousands of young men for the work house, thousands of young women for courses of debauchery and shame. Wherein lies the solution of the problems presented to us by such a condition of society. Is it not in the right education of women as the guardians of the family?

The disposition, the intellectual achievements, the inherent tendencies of woman has afforded themes for many discussions. The statesman has used his eloquence, either to justify the one extreme—woman suffrage; or to champion the other—their inability. The philosopher has devoted hours in delineating the various phases and characteristics of woman's temperament. The poet, when in the flights of his imagination he solves the great problems of the present, or like the prophets of old discloses the mysterious arcana of the future, depicts woman as surrounded by a halo of glory wielding the wand to which all forces are sub-

servient. But in the presence of this philosophy and speculation, education has tended to develop the coarser intellectual characteristics of woman to the deterioration of those qualities that have made her the perfect complement of man. The disposition, aye, the very temperament of woman, is being so changed by this unnatural education, that we no longer find in her, such personality or virtue as was painted by Eliot and Kingsley, Browning and Shakespeare. To-day, the loadstar of woman's ambition is not to make better the homes, not to heighten the joys of domestic life; but to reign supreme in the high-ways and by-ways of public service; or to wage an incessant warfare with her brother in some domineering profession. To her a Lease or a Kate Field has more attraction than the mother of Washington. This drift towards pursuits called practical is so strong that it carries with it much of the best talent. The rush and whirl of public life catches the gentler sex as in a maelstrom, and, if it sharpens and invigorates some of the powers, it dwarfs others and narrows the mental horizon. The champions of woman's suffrage proclaim as their goal, not only the elevation of woman-kind, but the revolutionizing of politics. Do the examples of the past in political life set forth the so-called virtuous and benign influences of the gentler sex? Isabella of Castile was full of amiable qualities, but she permitted herself to be made the instrument of diabolical religious persecution. Catharine II of Russia, was one of the ablest women who ever held a sceptre—and one of the *most profligate*. Maria Therese of Austria, was in many respects far above the common level, but she was a sharer of what has been called the greatest of political crimes—the partition of Poland.

The history of great reformers, of great men, is the history of great mothers. Byron's mother was proud and ill-tempered; behold her son. Washington's mother was pure, true and pious, and her son emulated her example. John Quincy Adams' mother was distinguished

for her intelligence and her son said—"I owe all that I am to mother." Lincoln's mother was intelligent, kind and sympathetic—her son has been called "The Inspired of America." It was at home that these men were inspired to their great work of life. Their mothers were not anxious to have other rights accorded them, but they rose to the appreciation of the glorious rights they already possessed.

Woman has the right to make home happy. That realm no one has ever disputed with her. Men may come home at noon or at night and then tarry a comparatively little while, but *she* all day long governs it, beautifies it, sanctifies it. It is within her power to make home the most attractive place on earth. It is the only calm harbor in this world. Four plain unpapered rooms may constitute home, yet, though the children may in after years win high positions, may have affluent residences, never will they forget that humble roof under which their father rested and their mother sang. Someone has said "If you would gather up all tender memories, all the lights and shades of the heart, all banquetings and reunions, all filial, paternal, fraternal and conjugal affections, and you had only four letters with which to write out that height and depth, and length and breadth, and magnitude and eternity of meaning, you would write out 'home.'"

Let woman study the perfect character, that she may be a medium through which truth may be diffused throughout the family—the unit on which all civilization rests; that the presence of her personality may aid those with whom she comes in contact in building a *character*—which is the ultimate end of human existence. Let her cultivate those instincts that unswervingly lead her to right and truth. Let her cultivate the love of the good and the beautiful; let her wield the wand of love at home. Let her study the inspired of poetry, that which is great, grand, sublime, magnificent, and noble in literature and bring into the homes the truths of Shakespeare, the moral teach-

ings of Eliot, the wisdom of Solomon, the inspired holiness of David.

When this education becomes universal the nascent mind of childhood will no longer be developed amid the vice of the illiterate, but at home in the midst of more congenial surroundings. Then will the public cease to wonder at the seeming anomaly of ignorant and debased children coming from the homes of the educated; then can the mother mould the very being of her children, then and not till then will politics be revolutionized and the bogs and marshes of society cease to exist. Then will such organizations as the Woman's Christian Temperance Union have outlived their usefulness and oblivion be a fit heritage for the political aspirations of our gentler sex. Then they can by the training resulting from the true education create and maintain higher systems of thought and purpose, raise the whole tone of national life and give our civilization the fullness it lacks.

But not by frothy declamations on platforms, nor flooding the book-stalls with sensational literature nor by trying to forget that they are women will they do this. Woman's relative position, her limitations in certain directions, are not of human origin. Man did not make them nor by any system of education can he unmake them. Nature has ordained that those subject to these restrictions shall not be forced to move in the harsh conflicts of the world or launch themselves in the turmoil where even the most robust sometimes fail. It is folly to ignore their limitations or attempt to nullify them by political, educational or social quackery.

To make home attractive is the highest triumph of woman. She is to render home happier by physical comforts, by books, by flowers, by delightful conversation, by the sweetness of her disposition and the gentleness of her deportment. Here is the true sphere of woman's influence; not in legislative halls, not in the costume of an actress, but at home. The guardian of infancy, the companion of youth, the partner of

manhood, the comforter of old age is woman. Here let her diminish sorrow by her sympathy, heighten joy by her gaiety, soothe pain by her tenderness, dignify life by her intelligence and elevate character by her devotion.

Changes in Student Labor.

At the beginning of this term certain changes are to be inaugurated in the student labor. A word of explanation may not be out of place.

For many years the college has been criticised and undoubtedly justly so because some of its graduates while thoroughly trained in the sciences were unable to perform with skill a large part of the ordinary farm operations. Many of them could name an insect or plant at sight or could analyze to its ultimate elements any ordinary agricultural compound, but could not hitch up a team or plow a straight furrow to save their lives.

Moreover, some of our students still come from farms. They felt that it was unjust that the boys from the city should be allowed to pass off the studies in which they were proficient while they themselves received no credit for their experience in the line of the real work of the college.

In view of these things the following scheme has been adopted for this term:

The entire number of agriculture freshmen will report to the Horticultural department for work, and the entire sophomore agriculturals will report to the farm department.

The sophomores will be divided into four sections, Section A. will take dairy work for the first three weeks of the term under Mr. True. At the same time Section B. will take stock judging. We shall assume that none of the boys whether from the city or from the farm are competent to pass off these two divisions of the work. An examination will be given at the close of the three weeks on the two subjects and those who fail will be obliged to repeat the work the following year. This labor being en-

tirely educational is of course without pay.

While the first two divisions of the class are taking the work in live stock and the dairy, the other two divisions are reporting for work in farm machinery and general farm work. At the beginning of the term a tentative examination will be given which we hope the young men from the farm will be able to pass. This examination will include, among other things, handling horses, rigging and handling plows, care and operation of farm machinery generally, drilling, marking corn ground and running the mower and binder.

To the young men who fail to pass this examination, elementary instruction will be given in the subjects mentioned. We cannot hope to make expert horsemen or plowmen in the limited time, but an attempt will be made to give them an introduction to the right methods of performing all kinds of farm work. A certain degree of proficiency will be required and no student will be allowed to go on with paid labor until he shall have reached the required grade.

The plan as at present outlined regards the student, who is obliged to take this elementary agricultural instruction, as being received in the college on condition, and this work is in the nature of making up the condition rather than legitimate college work.

For next spring term and the two terms following the work is not fully planned. The present experimental feature will be prominent but in addition some emphasis will be laid upon the acquisition of the ability to manage a Michigan farm, including planting the crops and caring for and harvesting them.

CLINTON D. SMITH.

One peculiarity that has been observed is in the abundance of smut on wheat. There is no oat rust but an abundance of it on the wheat. This peculiarity is very hard to explain; it looks as though the favorable weather for the production of rust on wheat is not favorable to oat rust.

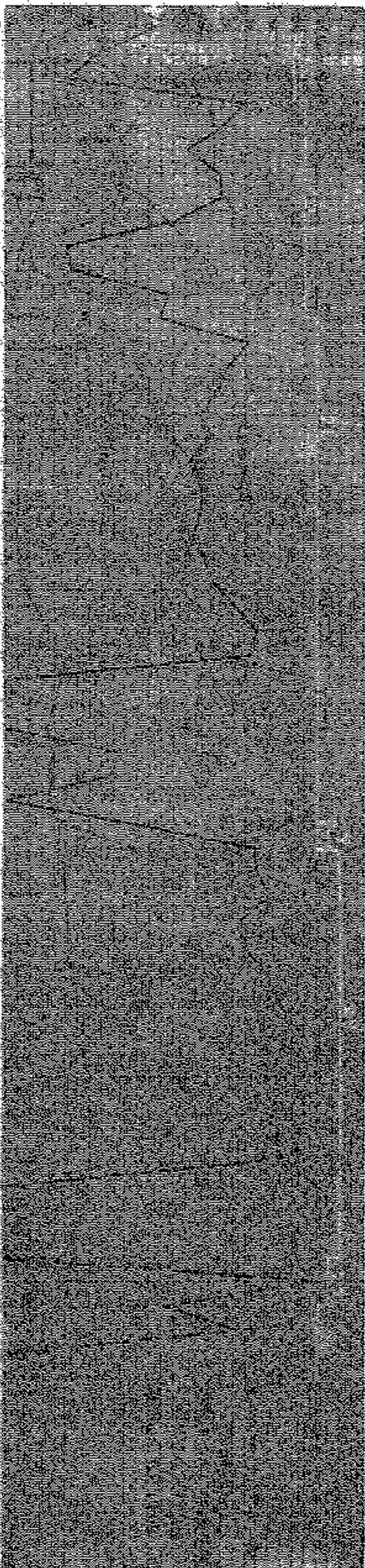
Wanted—a use for 500 amended programs for fall term, '95.

SCIENTIFIC.

Power Test by Class in Electrical Engineering.

Through the courtesy of the Lansing electrical railway managers, the class in electrical engineering were given the privileges of making a series of measurements on the cars running regular trips on the college line. The accompanying etching was made from a graphical report made up from one of the tests. Every 260 feet was taken as a station, and is so represented on the chart, so the total distance run was (No. of stations) 56×260 feet, or about 2 4-5 miles. On the chart the broken heavy line at the bottom represents the grade, each small square stands for one foot. The college end of the line is 15 feet above the base line. The lowest point on the line is at station No. 12, Bradford's, 3 feet above, and the highest at station 47, Pennsylvania Avenue, which is 37 feet above. The plotted curve shows the steepest grade between 23 and 26 at the race track, and that the two terminals are nearly same level. The car started from the college station 0, with a load of 24 passengers, at station 3, changed to 25, and at station 12 to 26 etc., as shown by chart. From the product of the voltage and current was calculated the horse power required, (shown by heavy black line.) Starting at station 0, with 12 H. P. falls to 5 H. P. at station 2 and rises to 20 H. P. to get up speed after getting extra passenger at station 3. Then H. P. corresponds to grade up to station 12, where car had to stop and back up to get a passenger, after getting passenger power required again raised to 20 H. P.; 22 H. P. was required to climb the steep grade at the race track, and no power at all when the car coasted from station 27 to station 29. The same is true from station 48, Pennsylvania Avenue, to station 51, the R. R. crossing. The maximum power was required on an exceptionally poor piece of track at station 52. The total time of the test or trip was 16 min., 47

STATIONS.	
College Gate	0
	1
	2
Club House	3
	4
	5
	6
Harrison's	7
	8
	9
	10
	11
Bradford's	12
	13
Baker's	14
	15
	16
	17
	18
	19
	20
	21
Brick Yard	22
	23
Race Track	24
	25
	26
	27
	28
	29
Springdale	30
	31
	32
	33
	34
	35
Shepard St.	36
	37
Lathrop St.	38
	39
	40
	41
	42
	43
Jones St.	44
Bingham St.	45
	46
Penn. Ave.	47
	48
Kerr St.	49
	50
R. R. cross'g	51
	52
Larch St.	53
	54
Cedar St.	55
U. S. & M. Ry	56



sec., and the average horse power 14.09. The car was No. 20, and is exceptionally heavy. Many peculiarities of track equipment and regulation are evident from the various curves.

P. B. W.

Electric Transmission of Power.

LYMAN J. BRIGGS.

(Abstract from an article delivered before the Tau Beta Pi, July 25, '95.)

In all problems relating to the electrical transmission of energy, two factors are to be considered, the *current* and the *potential* at which it is transmitted. For ordinary central station work in cities, whether with direct or alternating currents a constant voltage is maintained, the current being varied to suit the demand. For series or arc lighting, the current is kept constant, and the pressure varied according to the number of lamps used. This distinction is of importance in electrical transmission, although neither condition is imperative.

The relation between the potential at which the current is supplied to the motor and the heat loss in the circuit is to be considered in studying economic transmission. Let R represent the sum of all the resistances in the external circuit, C the current, E_d the difference of potential of the dynamo terminals, and E_m the counter electro-motive force of the motor. By Joule's law, the heat waste in watts = $C^2 R$. Since $C = \frac{E_d - E_m}{R}$ by Ohm's law,

we have on substitution, heat waste = $\frac{(E_d - E_m)^2}{R}$ watts.

Suppose now that we increase E_d and E_m in such a way that $(E_d - E_m)$ has the same value as before, and that R does not change the current, and therefore the heat loss will be precisely the same as before. Let the two new values of the potential difference at dynamo and motor terminals be designated by E'_d and E'_m respectively. The *electrical work* done or $W' = E'_d C$, and the *useful work* or $w' = E'_m C$, under the new conditions, while we would have $W = E_d C$, and $w =$

$E_m C$ with lower voltages. That is to say, with the same heat loss, more energy is transmitted, and more work done. The efficiency is also greater, since $w' = \frac{E'_m}{E'_d} W'$, and this ratio is nearer unity than $\frac{E_m}{E_d}$, since E'_m and E'_d were formed by

adding equal increments to E_m and E_d . To illustrate, let $E_d = 100$ volts, $E_m = 90$ volts, $R = 1$ ohm. Then $C = \frac{100 - 90}{1} = 10$

amperes. $W = 1,000$ watts, $w = 900$ watts, and the heat waste is 100 watts, giving an electrical efficiency of 90%. Suppose now E_d to be increased to 1,000 volts, and E_m to 990 volts. $C = 10$ amperes as before. But $W' = 10,000$ watts, and $w' = 9,900$ watts, while the heat waste is 100 watts. There is ten times as much energy transmitted with the same heat waste, and the efficiency has risen to 99%. A high voltage is therefore an important factor in successful economic transmission. The various methods of obtaining such voltages will now be considered.

The E. M. F. of a generator is proportional to the product of three factors, viz.: the number of turns of wire on the armature, the number of lines of force threading through the armature core, and the speed. These principles furnish us with the following methods for securing the desired electro-motive force: (i) Driving both generator and motor at high speeds. This is limited by mechanical considerations. (ii) Winding the armature with many turns of wire. This is practicable only when the line resistance is large compared with the internal resistance of the generator. (iii) Employing powerful field magnets. (iv) Hitching several generators in series.

High voltages for transmission purposes may also be obtained by means of a transformer, which is but a modified Ruhmkorff's induction coil, the alternating current from the dynamo rendering the "make and break" apparatus unnecessary. By varying the number of turns

in the primary and secondary coils, any voltage within certain limits determined chiefly by insulation difficulties may be obtained. This feature is important, for the voltage at the receiving end of the line may be "stepped down" to any desired pressure. This fact, together with the high efficiency (97% or 98%) is rapidly bringing the transformer into general use.

Germination at a Low Temperature.

An interesting discovery in seed germination at a low temperature was recently made by Mr. True of the dairy department. Wheat chaff containing some chess seed (*Bromus Secalinus* L), had been used in packing the ice in the ice house, and this seed he found to have germinated; the slender rootlets piercing the ice in some cases to the depth of one and one-half inches. Only two other varieties of seeds, rye and white mustard, are known to germinate at the temperature of ice. Prof. Wheeler regards this incident as a satisfactory explanation of the reason why chess is often abundant in wet cold spots in wheat fields where the wheat has been killed out. He will try some experiments along this line.

PROCEEDINGS OF THE BOARD.

At meeting of the State Board Aug. 12 and 13, the following business was transacted: Degree of Master of Agriculture was granted to Eugene Davenport and Clifton B. Charles. M. S. Degree to C. B. Smith, U. P. Hedrick and P. G. Holden; and the honorary degree of Master of Horticulture on Roland Morrill of Benton Harbor.

Seventy-five dollars was allowed for tools in the wood shop. A request was made to the U. S. war department for new field pieces at the college.

Resignations of Prof. Mumford and Messrs. Rossman, Hedrick and Stevens were accepted, and A. B. Cordley appointed to succeed Mr. Hedrick at a salary of \$500 per year, H. E. Harrison to succeed Mr. Rossman at a salary of \$600 per annum; Mr. H. W. Mumford to succeed Prof. Mumford at a salary of \$800 per year, and M. W. Fulton to succeed Mr. Stevens at a salary of \$500 per year.

Superintendent of Institutes, Kenyon L. Butterfield, is busy organizing institutes throughout the State. Great interest is made manifest in the farming districts in general.

THE SPECULUM.

PUBLISHED MONTHLY DURING THE COLLEGE YEAR,
BY THE STUDENTS
OF THE MICHIGAN STATE AGRICULTURAL COLLEGE.

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AGRICULTURAL COLLEGE, AUG. 15, 1895.

LET no reader of THE SPECULUM fail to read the abstract of the address of Ex-President Willits delivered at the graduating exercises August 13, on the subject of "Agriculture in Transition."

JUST as we go to press, Mr. J. P. Churchill, treasurer of the class of '95, hands us \$5.15 and a copper plate engraving as a gift from the class. Many thanks. The plate is a beauty; look and see for yourself, as we are using it at the head of the news items in this issue.

MANY thanks are due our most able predecessors for their very efficient work during the past year. Under their management, its personal and financial conditions have both been greatly improved; while the literary contents of its columns have been well up to the high standard, making THE SPECULUM a sheet of which the college has justly been proud.

WHEN we consider the multitude of changes that have taken place in the editorial staff and governing board of THE SPECULUM since its first issue in August,

1881; it seems truly remarkable that it has had so few vicissitudes. Its history has been one of continual development. Each year there has been marked improvements over the last, until the present management are now able with this issue to begin the fifteenth year under the most auspicious circumstances.

THIS year a thesis has been required of the agricultural graduates for the first time, and the results have been, in the main, very gratifying to the instructors. The theses are many of them articles of much merit, and although it adds one more weight to the already heavy course, yet it is very probable that the thesis has come to stay. There is certainly no question as to the great worth of such work to the student, requiring as it does absolutely original investigation. Theses have been required of the mechanical students since the establishment of the course.

OUR thanks, congratulations and good wishes we most cordially extend to the class of '95. Our thanks we extend for the good they have done us; our congratulations for the good they have accomplished for themselves, and our good wishes are for their future. May the warp and woof of their future, consist of a maximum of pleasures and successes, and a minimum of failures and pain. '95 is remarkable in several respects. It is the second largest class that ever graduated from the institution, while their general class average is second to none. There are thirty-five men of them and include among their numbers, fellows from Canada, Siberia and Japan, as well as from all parts of our own and neighboring states.

WITH this number the curtain rises on the scene which '96 is to play. There are glowing prospects for the future, but we who are on the stage fully appreciate how little can be accomplished, unless we have the hearty support of the public before whom we play. The instructors,

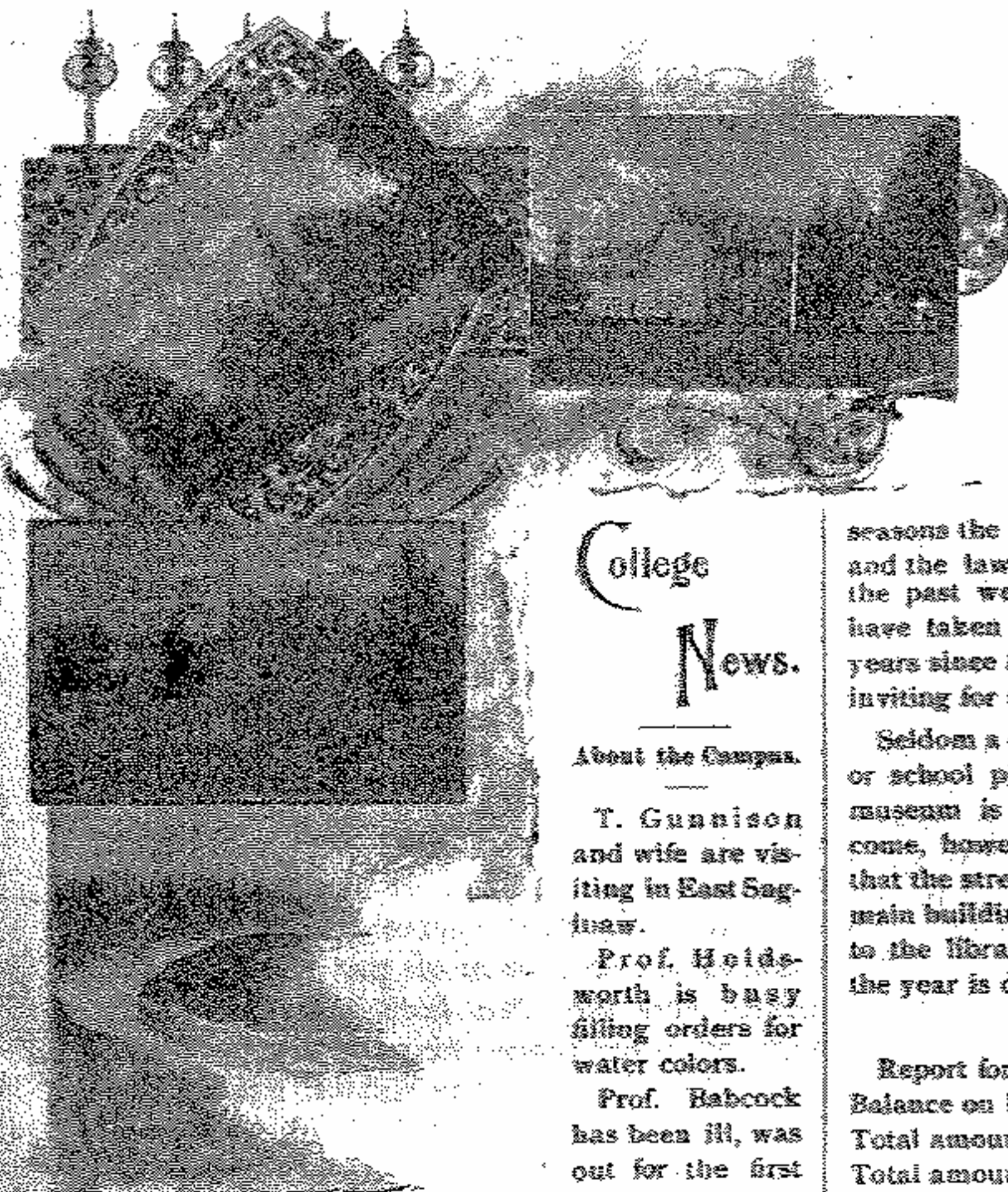
the student body, and the alumni are those to whom we especially appeal in this matter. The first two are here at the college, while the latter are all over our broad land, and from all we are confident of great aid by their encouraging words, and prompt, profuse literary (and financial) contributions. We hope to hear from every one of the college alumnus at least once during the year, even though it be only a postal card. Where are you, and what are you doing? We and your brother alumni are all anxious to learn about you.

WE understand that for "summer students" laboratory practice is interpreted as manual labor, while for regular students it is not; and under this ruling they fill our laboratories and over-work our instructors at a time of the year when over-work is most oppressive. And this, also, to the exclusion of the regular students who pay the fees, and by their regular attendance help to support the college and swell the roll of graduates. The original object for holding out such inducements to summer students, was to get a "pull" upon high school students through the teachers who would attend here; but when so many "flunkers" from other institutions attend and so few influential teachers, it foils the original purpose and makes M. A. C. a summer dumping ground for shallow pated aspirants. Scores of the regular students would be glad to do their manual labor in the laboratories, and we trust that another year these unjust and unreasonable preferences will not be shown against us.

At the Students' Organization, July 26, the following officers were elected for the ensuing year: President, O. C. Reed; Vice President, G. N. Eastman; Secretary, H. L. Becker; Treasurer, L. Chapman; M. I. A. A. Representative, B. A. Bowditch.

Mrs. Noble, Mrs. Holdsworth and Mrs. Woodworth tendered a reception to the faculty and sub-faculty July 21, in honor of Mrs. Clute and Mrs. Reynolds.

Dr. and Mrs. Edwards entertained the seniors July 19.



College News.

About the Campus.

T. Gunnison and wife are visiting in East Saginaw.

Prof. Holdsworth is busy filling orders for water colors.

Prof. Babcock has been ill, was out for the first on August 16.

Thomas Dierks has returned from his trip to Geneva, N. Y.

Mrs. E. A. Lewis returned from a visit in Baltimore in time for commencement.

Prof. Noble and family and Mrs. Woodworth are staying at the hotel at Pine Lake.

Prof. Vedder and Secretary Butterfield have cottages on the island at Pine Lake.

Prof. and Mrs. Barrows tendered a reception to the U. L. S. on the evening of July 19.

Lieutenant and Mrs. Lewis entertained the Eclectic Society on the evening of July 20.

Prof. Taft has left on a two weeks vacation to Massachusetts, to visit his former home. His family will return with him.

Mrs. Clute and children are at Ionia for a few days. They will return to M. A. C. and stay till the college year opens in Florida.

A front entrance to the basement of the Physical Laboratory is being put in. The basement will be fitted up for physical laboratory work.

Mrs. Reynolds and son Robert, left on the 16th for Old Mission before going to California. Mrs. Reynolds has been the guest of Mrs. Dr. Edwards.

The chemical department have just issued a bulletin on the "Analysis of Fertilizers." A "Special Bee Bulletin" has also been published by R. L. Taylor of Lapeer.

Prof. Barrows reports that a large, red shouldered hawk flew against a chimney of his house the other evening and killed himself. Professor can't understand why the chimney of his house should have been chosen in preference to others.

The much needed and long looked for rain has arrived. For several seasons the beauty of the campus has been blasted and the lawn covered with brown grass. But within the past week the grass, flowers and wild garden have taken on a coat of green. It has been several years since the grounds have looked so beautiful and inviting for commencement.

Scidom a day passes that some farmers' gathering or school picnic does not visit our campus, and the museum is as usual the central attraction. Many come, however, who would not do so if they knew that the street cars dropped them half a mile from the main buildings. We hope to see the line continued to the library, or at least to Howard terrace before the year is done.

THE SPECULUM ACCOUNT.

Report for the year ending August, 1895:	
Balance on hand August, 1894,	37
Total amount collected during year,	\$612 98
Total amount paid out during year,	612 40
Balance on hand August, 1895,	57
Account with Thompson & Van Buren:	
Amount due Thompson & Van Buren August, 1894,	\$243 28
Amount paid Thompson & Van Buren,	584 62
Expenses for printing during year,	471 39
Balance still due Thompson & Van Buren,	\$130 65
Submitted to the Students' Organization August 1, 1895.	

M. W. FULTON.

COMMENCEMENT EXERCISES.

Immediately after examinations on Friday, Aug. 9, many of the students went home for a short vacation so that the attendance at all commencement exercises was smaller than in previous years. This, however, left more room for the accommodation of the graduates and their immediate friends at the various exercises, at the dormitories and at the clubs, and everything went "merry as a marriage bell." All seemed to enjoy themselves and many were the remarks of praise for our campus which is just now looking its best.

The baccalaureate address was delivered in the Armory Sunday afternoon, Aug. 11, at two o'clock by Pres. Gorton. The president spoke very pleasantly

and wisely to this his second class from M. A. C. The two solos by Mr. Phil. E. Baer were also interesting features of the order of service.

On the afternoon of August 12 the senior class rendered the following class day exercises. The articles were well up to the average. The poem by Mr. Kaines and the oration by Mr. Heck deserve special mention. The last of which we publish in this issue of THE SPECULUM. The program was as follows:

Music,	-	-	-	Eclectic Orchestra
President's Address,	-	-	-	Guy L. Stewart
Oration,	-	-	-	E. J. Heck
Vocal Solo,	-	-	-	Miss Sophia Haynes
History,	-	-	-	Chas. H. Robinson
Poem,	-	-	-	M. G. Kaines
Vocal Duet,	-	-	-	{ Miss Zoe Smith Mr. G. B. Smith
Prophecy,	-	-	-	Hugh E. Ward
College Paper,	-	-	-	W. G. Goodenough
Music,	-	-	-	Eclectic Orchestra

President Gorton's reception in the evening from 8 to 10 o'clock was largely attended and hugely enjoyed by all. It was followed by a hop at the Armory where beauty and chivalry danced to most excellent music by the Eclectic orchestra till the gray light of dawn.

On Tuesday morning at 10 A. M. occurred the graduating exercises proper. The program was as follows:

March,	-	-	-	"Exponent"
				Meech's Orchestra.
				Invocation.
Music,	-	-	-	"Lead Kindly Light"
				Lansing Male Quartette.
Address,	-	-	-	Education of the Farmer
				H. R. Smith.
Address,	-	-	-	The Niagara Water Power Development
				R. L. Reynolds.
Music,	-	-	-	"Annie Laurie"
				Lansing Male Quartette.
Address,	-	-	-	Agriculture in Transition
				Hon. Edwin Willits.
Overture,	-	-	-	"Bohemian Girl"
				Meech's Orchestra.
				Presentation of Medals.
Music,	-	-	-	"Liberty Bell"
				Meech's Orchestra.
				Presentation of Diplomas.
Music,	-	-	-	"Fascination"
				Meech's Orchestra.

The morning was fine, the Armory pleasant, the program excellent, the audience in good humor and everything moved pleasantly from start to finish.

Mr. H. R. Smith and Mr. R. L. Reynolds each did themselves, their class and the college credit in their addresses and were roundly applauded, but the signal for an overwhelming burst of applause was when Hon. Edwin Willits, ex-president of the college, arose to deliver the address of the day. He spoke for an hour in his most telling way upon "Agriculture in Transition," abstracts of which will be found in another column of this issue; we regret that space will not permit us to publish it in full. Immediately

upon the conclusion of these programs the graduates, students no more, with their relatives and friends began leaving for their homes or for a summer vacation and at present writing "all is quiet along the"—Red Cedar.

Wednesday P. M., at four o'clock began the inspection of military companies by State Adjt.-General Green of Detroit. The troops were in good condition and made a satisfactory appearance. Very little was said by the inspector, but he seemed well pleased. His official report has not yet been made public. The promotions of the non-commissioned officers from the freshman and sophomore classes are made entirely on individual merit. A scale of 300 points is considered perfect. Special notice being given to appearance and soldiery bearing; clothing, arms and equipments; precision in the manual of arms, company drill and extended order. The following appointments in the battalion of cadets are to take place this term: Captains—Amos, Briggs, Morse and Fimple. Adjutant with rank of First Lieutenant—Sees. Quartermaster with rank of First Lieutenant—Thompson. First Lieutenant and Chief of Artillery—Herbert. First Lieutenants—Buek, Love, McGee and West. Second Lieutenants—Barnum, Young, Bowditch, Rork and Myers. Sergeant Major—Humphrey. First Sergeants—Merkel, VanNorman, Rogers and Shaw. Sergeants—Herrman, Goodwin, Hart, Hagerdorn, Dibble, Patriarch, McLouth, Groves, Munson, Chittenden, Elliott, Lowey, Parker, Fischer, Redfern, Rigterink and Gorenflo. Corporals—Denton, Lundy, Merkel, Morrow, Eldridge, Fairfield, Crittenden, Nichols, Gunnison, Arnt, Severance, Austin, E. Cole, L. Loomis, Warren, Williams, F. Kedzie.

July 26, a social evening was given by the faculty to the students. It was the first of its kind given in several years and was enjoyed by a large number of the college population. The numbers on the program were interspersed with dances to the music of the Eclectic orchestra:

1. Club swinging, - - - - - Mr. W. F. Lyon
2. Solo—"This Time Last Year," Mr. G. R. Curtis
3. Select reading, - - - - - Mrs. G. C. Davis
4. Solo—"Love's Chord," - - - - - Mr. J. E. Daniels
5. Solo—"To Sevilla," - - - - - Miss A. B. Shepard
6. Selection from "Much Ado About Nothing," parts of Act II, Scene III, and of Act IV, Scene I.
Mrs. Kedzie and Messrs. Mumford, Hedrick, Davis, Noble and Crosby.
7. Duet—"I Feel Thy Angel Spirit," Miss Shepard and Mr. Curtis.
8. Selection from "Much Ado About Nothing," part of Act III, Scene III.
Messrs. Holdsworth, Wheeler, Noble, Crosby, Hedrick and Edwards.
9. Club swinging, - - - - - Mrs. F. B. Mumford
10. Duet—"The Pilot," Mr. Daniels and Mr. Curtis

THE TIE OF HYMEN.

Some time before six o'clock Wednesday evening, August 14th, the many guests began to arrive at St. Paul's Episcopal church of Lansing to witness the marriage of Mr. Maurice G. Kains, '95,

to Miss Inez M. Hutton. Promptly at 6 o'clock the vested choir filed in followed by the bridal party (consisting of the ushers, Messrs. Ed. Higgs, Jas. Kimball, Geo. Rose and Guy L. Stewart, the second groomsmen, Mr. Douglass Kains, the maids Misses, Heland and Florence Day, and the bride on the arm of Mr. Foster.) They were met by Mr. Kains and Mr. Van Alstyne, his best man. The vows were taken and they were declared one by Rev. Mr. Osborne, after which the invited guests repaired to the residence of the bride at 215 Walnut St., N., where a most pleasant time was spent until time for the train which was to take them on their wedding trip to St. Thomas, Ont., the home of Mr. Kains. They were accompanied to the depot by young lady and young gentlemen friends, where copious showers of rice hailed about them with the many wishes for health happiness and long life.

FARM AND GARDEN.

Alfalfa is growing nicely.

No. 16 is being ditched and 2,200 feet of tile will be put in.

Sacaline, a fodder claimed by some to be of great value, is not a promising crop.

The hay crop is practically a failure but a sufficient amount was left over for another winter.

Educational work on the farm for the sophomore class has been changed again to the afternoon.

A drive is to be graded along the south side of the river so as to gain access to the forest directly east of No. 7.

Twenty acres of rape is now growing on the farm, 200 sheep will be purchased this fall to experiment upon its value as a fodder.

The hot water treatment for the stinking smut of wheat was not a success. The treatment for smut was a failure in all cases.

The Holstein cow "Belle Sarcaste" is making a remarkable milk record. For the past fifteen months she has given over 2,500 lbs. of milk.

The new "M. A. C." fence has been built between No. 10 and 12. It is a wire fence that was designed here and constructed entirely by student labor. This makes all the fences, to the Grand Trunk, wire but one.

A bulletin has just been issued on the comparative value of feeding sheep. Several plans were tried: among them the value of self-feed, feeding several times a day; shearing at the beginning of the fattening period, and a comparison of *out* and *in* door feeding.

J. A. Jaiser of Wisconsin, last spring introduced a German coffee berry to be used as a substitute for coffee. Samples of seed were secured by the farm department, at a high price, and planted beside the Soyer bean in the curiosity strip. At the time of going to press no difference can be seen. In this way the farmers and gardeners are duped. They see the advertisement for seed and to reduce the grocer's

bill a trial is given. This practice of deception should be severely dealt with and our legislature should make such deceptions criminal.

MECHANICAL.

A new dynamo has arrived at the shops to be used exclusively for lighting the shops and the mechanical drawing and class rooms.

Richard L. Frost, with the class of '84, has recently invented a new steel pump that possesses several new and valuable features. Quite an elaborate description with several plates showing the mechanism, is given in the "American Machinist" of May 9.

W. J. Goodenough and H. R. Parish recently made an efficiency test of the boilers and engine of the steamship "Rappahannock." The test was made while on the trip from Detroit to Buffalo. An engine test of six hours, and a boiler test of ten hours was made. The boys report a pleasant trip.

BOTANICAL.

Instructor B. O. Longyear has just completed a map of the botanic garden. It now covers three acres.

Just east of Howard terrace a grove is under way that is to comprise all varieties of trees and shrubs of Michigan.

Prof. Wheeler has returned from his northern trip to Alpena. He was gone three weeks and found seven flowering plants new to Michigan. He also secured 30 living plants for the botanic garden.

A collection of seeds made here at the college was sent to the Kew Gardens near London, England, in exchange for seeds that were received here last spring. A plant and seed collection for Washington, D. C., is also in progress. While another collection is to go to Denmark in exchange for a collection of grass seed received here last year.

Mr. D. D. McArthur of South Dakota has sent us some large specimens of the Russian thistle to exhibit at farmers' institutes this winter, in order to show the growth of the thistle as it is in nature. A barrel is placed over the plant while yet green and the plant allowed to dry. These barrels can be easily taken to the institutes and the plant can be observed in its natural form.

PERSONALS.

We desire the earnest co-operation 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 the department, often, thus making his work much easier and the department more interesting to all.

'73.

Rolla C. Carpenter, professor of experimental engineering at Cornell, has just published an elementary treatise on Heating and Ventilating Buildings.

'78.

F. E. Skeels is appraising lands in Wexford county. He goes from there to Benzie county.

Prof. Smith met C. C. Georgeson at the Denver meeting of experiment station workers.

'79.

A. A. Crozier of the farm department, has just sent out Bulletin 126. It is on Clovers and The Experiment of De-tasseling Corn.

'82.

J. Mace Smith, who has been holding the position of principal of the public schools of Saratoga, N. Y., has recently been appointed superintendent of schools of Hudson N. Y. The citizens of Hudson are to be congratulated upon securing his services.

'83.

A. M. Emery is at the head of the new firm known as the Lansing Book & Paper Co.

'85.

J. W. Matthews of Platteville, Wis., is visiting in Grand Rapids.

G. C. Lawrence has been retained for another year as teacher of the Okemos school.

'88.

Prof. Henry Thurtell of the Nevada University, is attending the University of Chicago.

F. H. Hillman was at the Denver convention. He is at present visiting with his parents in Tecumseh.

W. O. Silvers, with '88, is a farmer near Clinton, Mich., and manager of the Clinton woolen mills base ball team.

'89.

T. F. McGrath is a draughtsman in Chicago.

Chas. Ferris is visiting at Empire, Leelanaw Co. He will return to Knoxville in September.

WITH '90.

F. S. Robinson graduated at Cornell this year as an architect.

'91.

Stricker was with the Detroit boys at the Island lake encampment.

'92.

L. B. Plummer was married July 9th to Miss Laura D. Easter. THE SPECULUM extends congratulations.

Dor N. Stowell writes that he is managing a ball team at Woodland.

"Sagendorph" graduated from the U. of M. with this year's law class.

WITH '92.

Milo Foster is a telegraph operator in Ohio.

'93.

W. L. Harvey was recently sent on a trip through eastern Iowa in the interest of the flouring mill he represents.

Emile Smith visited M. A. C. a short time ago. He has a very good position in Pennsylvania secured him by Nicola Tesla.

C. E. Holmes is studying at the Valparaiso normal school this summer.

U. P. Hedrick has been appointed professor of horticulture and botany at the Oregon Agricultural College at Corvallis, Oregon. We congratulate U. P. on his good fortune.

W. W. Tracy has been promoted to crop inspector for Michigan in the D. M. Ferry Seed Co.

L. J. Briggs is going to study at the Johns Hopkins College the coming year.

L. J. Briggs, E. M. McElroy, W. W. Parker, E. B. Hale, R. B. Pickett and H. R. Allen visited M. A. C. during commencement.

F. P. Clark and S. J. Blake are with the Kalamazoo company at the Island lake encampment.

WITH '93.

F. H. Kishpaugh made a call at M. A. C. recently. He is with the Lansing Iron Works.

'94.

E. V. Johnston is working for Sterlinger Bros., of Detroit.

R. S. Welsh is still at Dafter.

H. W. Tracy is traveling in Maryland at present for D. M. Ferry & Co.

D. D. McArthur called at M. A. C. recently on his way to Cass City. He will return to his work in the Indian School at Greenwood, S. D., on the 21st inst. He intimated to us that he would not return alone.

WITH '94.

Bert D. Parker is one of Michigan's crack bicyclists in class A this year.

WITH '96.

F. Sharp was at M. A. C. recently.

George Fisher is with L. H. P. Fisher, dealer in china and cut glass, of Grand Rapids.

L. L. Edwards is farming at Albion, Ind.

'97.

J. B. McCallum, who was injured by the overturning of his carriage some time ago, is recovering rapidly and is able to go about with the aid of crutches.

WITH '97.

Fred Barr is at home on the farm. He wrote that he was going camping for a week soon.

T. Clark is on a farm at Cannonsburg.

R. Gongwer is also farming.

Lewis Smith is working in a bank at Gaylord.

ATHLETICS.

During the warm summer days, tennis has been the principal sport. The enthusiasm has not been limited to the "scrub" games on the campus, but Mr. Reynolds and Mr. Churchill, both of '95, have played against the Lansing high school and against the Lansing tennis club. The following score will show that in all but one game our boys were successful. Before field day two games were played with the Lansing

high school. Montgomery and Bement representing the high school. Our boys won both games. Score 4-1; 3-0.

Since field day the following games were played with the Lansing tennis club.

First game against Curtiss and Baker, won by M. A. C. Score 3-0.

In a game of singles between Curtiss, L. T. C., and Reynolds, M. A. C., Reynolds won. Score 3-1.

In the next game of doubles, against Curtiss and McGrath, our boys won. Score 2-0.

Our boys won another game against McGrath and Wagner. Score 3-0.

All the following games were played by our boys against Curtiss and Hickey:

First game, 6-0; 6-4; 6-2; 8-6 in favor of M. A. C.

Second game, 6-4; 1-6; 7-5; 4-6; 6-4 in favor of M. A. C.

Third game only two sets were played. Score 7-5 in favor of M. A. C. 5-7 in favor of L. T. C.

Churchill not feeling well the game was postponed.

Hickey, L. T. C., is a student of the U. of M. He complimented our boys on their ability and said we would make a favorable showing against U. of M. players.

It is hoped that some plan will materialize by which our best player will represent us at the next field day. How would a series of games between our best players do? The benefits which would follow from such a plan would be manifold. Those who would represent us would have ample time for preparation and our boys would know on whom to stake their confidence (\$). Would not the betterment of this sport be furthered by electing a tennis manager?

Since field day only four ball games have been played on the college grounds. This is decidedly as it should not be. We are here during the whole season and there is no reason why we should not have the best ball team in the M. I. A. A. It is hoped that the incoming manager will secure games throughout the season, thus building up a stronger team and placing the standard of players higher.

Let us give the ball players better encouragement in the way of criticism. We should think, whether we take an active part in athletics or not, that the success of our athletes, our tennis players and our foot ball team, as well as our base ball team, depends a great deal upon the enthusiasm "with which we fire them."

Of the four ball games, two were five inning games between the sub-faculty and the freshmen. Both resulted in victories for the latter by a score each time of 8-5. July 26, the college nine played the Lansing athletic club on the college grounds. The game was marked by the number of errors principally by the L. A. C. which were costly. The following is the score:

	1	2	3	4	5	6	7	8	9	R.	H.	E.
M. A. C.	3	4	3	6	6	0	0	1	0	23	24	11
L. A. C.	0	0	0	2	5	4	2	0	0	13	13	23

Batteries, M. A. C.—Reed, Warren, Ansorge and Krental.

L. A. C.—Graham and Woods.

August 3, a college picked up nine played a team from Bath. Seven innings were played and game resulted in a victory for Bath, score—15-10.

The season of foot ball is rapidly coming on and it is hoped that the greatest possible effort will be made to make a successful season. With our able captain and heavy weights we can form a strong team. The games of last year taught the boys a great deal. These pointers will be of great benefit to the team this year.

The date for local field day is set for September 21. F. W. Herbert, local field manager, wishes to state that all entries must be in by September 17. Let us help the good work along and make the field day a successful one.

Societies.

The fall term society officers are as follows:

FERONIAN SOCIETY.

President, Miss Myrtle Peek.
 Vice President, Miss Bertha Wellman.
 Secretary, Miss Bertha Baker.
 Treasurer, Miss Lillian Wheeler.

COMMENCEMENT PROGRAM.

President's Address,	Miss Loa Renner
Characterization of Longfellow,	Mary Baker
Essay,	Miss Alice Coats
Society Paper,	Miss Katie Cook
Recitation,	Miss Bertha Wellman
Story,	Miss Lillian Wheeler
Prophecy,	Miss Lizzie Trueman

HESPERIAN SOCIETY.

President, L. P. Fimple.
 Vice President, W. T. Barnum.
 Treasurer, J. D. McLouth.
 Secretary, H. L. Becker.
 Janitor, D. J. Hale.

COMMENCEMENT PROGRAM.

President's Address,	J. S. Mitchell
History,	H. W. Lawson
Oration,	H. F. Lake, Jr
Prophecy,	G. E. Stewart

COLUMBIAN SOCIETY.

President, M. W. Stutz.
 Vice President, O. P. West.
 Secretary, T. L. Hankinson.
 Treasurer, W. Kingston.

COMMENCEMENT PROGRAM.

President's Address,	J. G. Veldhuis
Oration,	M. W. Fulton
Prophecy,	R. J. Wilson
Poem,	O. P. West
History,	W. J. Cummings
Society Paper,	F. B. Phillips

UNION LITERARY SOCIETY.

President, C. H. Briggs.
 Vice President, E. A. Robinson.
 Secretary, G. F. Richmond.
 Treasurer, F. W. Robison.
 Marshal, F. V. Warren.

COMMENCEMENT PROGRAM.

President's Address,	J. E. Niswander
History,	P. V. Ross
Oration,	C. H. Robison
Poem,	W. J. McGee
Prophesy,	C. H. Briggs
Society Paper,	E. D. Partridge

OLYMPIC SOCIETY.

President, N. M. Morse.
 Vice President, H. W. Hart.
 Secretary, O. R. Austin.
 Treasurer, E. Shaw.
 Marshal, A. M. Patriarche.

COMMENCEMENT PROGRAM.

President's Address,	H. R. Smith
History,	H. E. Ward
Poem,	C. P. Close
Oration,	C. A. Jewell
Prophesy,	N. M. Morse

ECLECTIC SOCIETY.

President, R. L. Clute.
 Vice President, R. B. Buek.
 Secretary, H. Arnt.
 Treasurer, C. D. Butterfield.
 Marshal, H. A. Dibble.

COMMENCEMENT PROGRAM.

President's Address,	W. C. Stebbins
History,	F. W. Herbert
Poem,	R. L. Clute
Prophesy,	F. W. Lewis
Oration,	D. T. Randall
Society Paper,	A. C. Cole

DELTA TAU DELTA FRATERNITY.

President, E. M. Kanter.
 Vice President, Fred H. Yapple.
 Secretary and Treasurer, Fred B. Ainger.
 And we regret that we failed to get the program.

PHI DELTA THETA.

President, B. A. Bowditch.
 Reporter, O. Gorenflo
 Secretary, Neil Chapin.
 Treasurer, Herbert Hagadorn.
 Warden, Calvert M. Wardwell.
 Chaplain, Amos Spear.

COMMENCEMENT TOASTS.

The Fraternity,	C. H. Alvord, '95
The Class of '95,	B. A. Bowditch, '96
The Faculty,	Prof. F. S. Keezie, '77
The College,	Dr. W. J. Beal, '59
The Ladie,	J. H. Kimball, '95
Auf Wiedersehen,	Chas. Herrmann, '97

The twelfth annual literary meeting of the societies and fraternities was given at the chapel Friday evening, July 12:

PROGRAM.

Story,	W. J. McGee
Oration—Thomas Arnold of Rugby,	H. W. Hart
Piano Solo—"D. Desiderio,"	Miss Myrtle Peck
Character Delineation,	F. H. Yapple
Sermon,	H. R. Parish
Guitar Solo,	E. D. Partridge
Poem,	W. C. Bagley
College Paper,	W. R. Vanderhoef

Music by the Eclectic orchestra.

August 2, the joint celebration of college societies and fraternities was held in the armory.

In the declamations, the silver medal was won by Miss Bertha Wellman.

The gold medal for oratory by Chas. H. Alvord, while in the debate Gerrit Masselink was victorious.

This is a new feature inaugurated by Dr. Edwards and carried out for the first time this year. It has proved a very pleasing success, and will doubtless remain a permanent feature. Full details of the organization and its workings are given in the last April number of THE SPECULUM.



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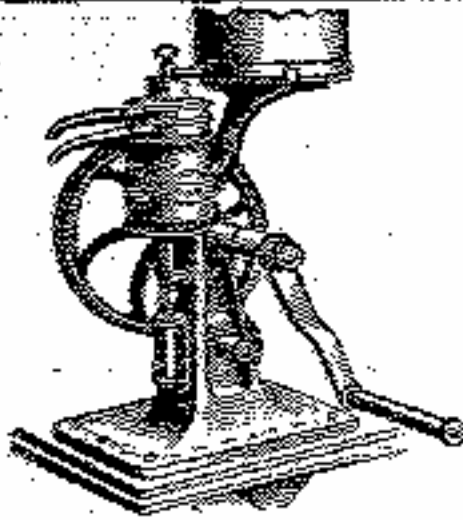
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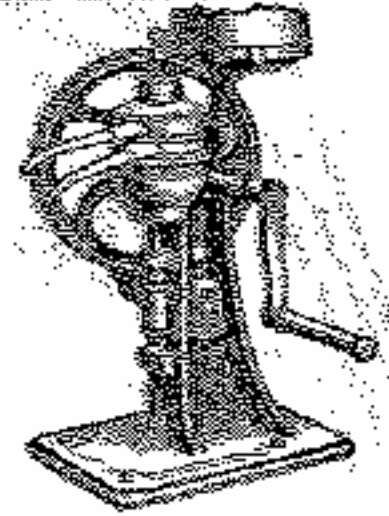


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