

THE SPECULUM.

VOLUME IX.—No. 3.

AGRICULTURAL COLLEGE, MICH., OCT. 10, 1889.

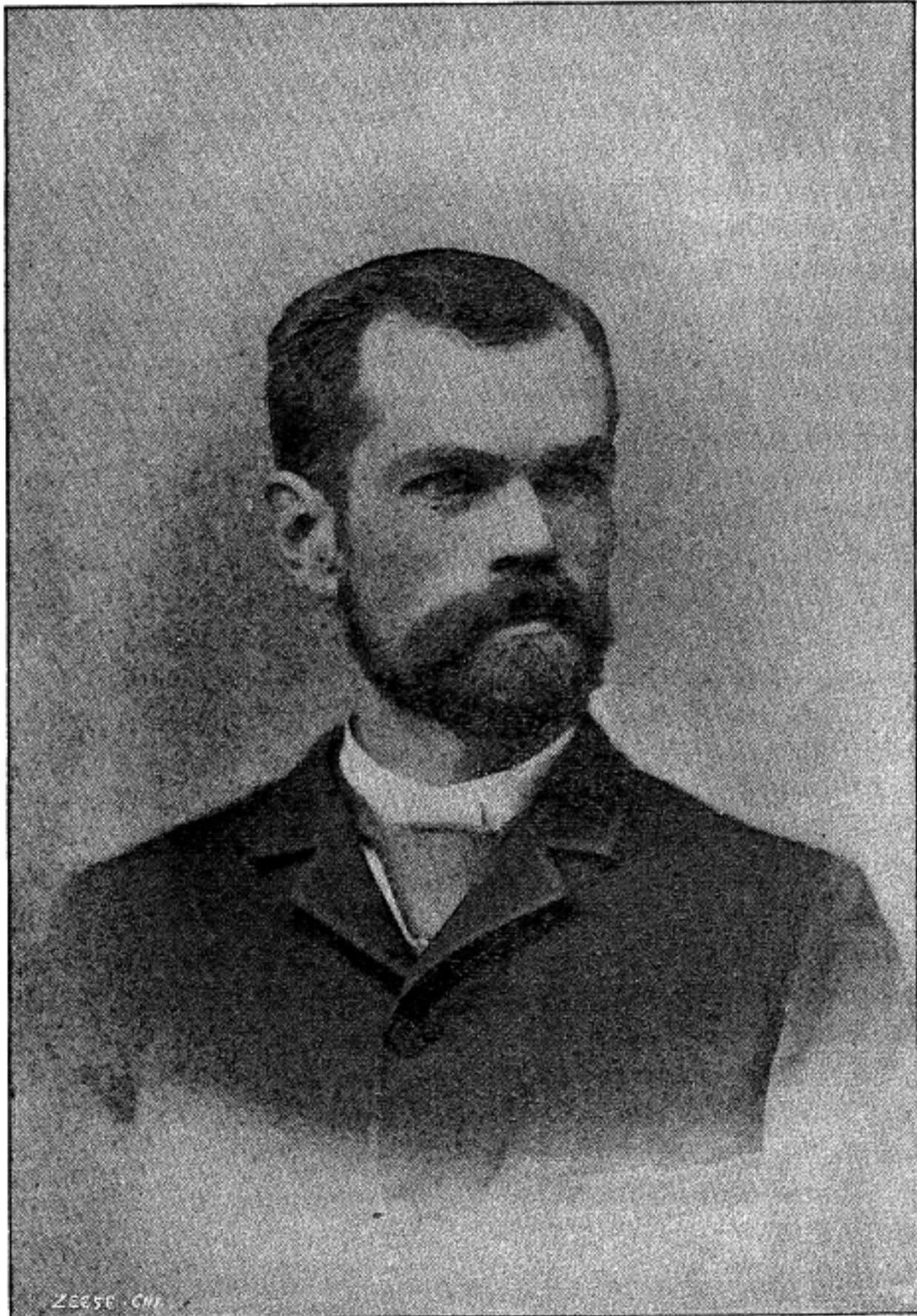
WHOLE No. 41.

Professor Eugene Davenport.

There is no department of the college, whose genuine success is more heartily de-

sired by faculty, alumni and students, than is that of Practical Agriculture. This with the Horticultural Department, and their necessary adjunct in this college, the labor

system, have always had the loyal support of faculty, graduates, and, with few exceptions, of the students. A few years since, at the request of the Professor of Agricul-



sired by faculty, alumni and students, than is that of Practical Agriculture. This with the Horticultural Department, and their necessary adjunct in this college, the labor

ture, the whole course of study was changed to arrange his studies or classes as this professor wished them. Never in the history of the college, as examination of the faculty

records shows, has the Agricultural or Horticultural Departments preferred a request that the faculty has not hastened to grant. This is as it should be. Every member of the college faculty recognizes that these departments, with the labor system, are, and should be, the very back-bone of our institution. Alack the day when it shall be otherwise! Prof. Davenport graduated in 1878, and so is known intimately but to a comparative few of the old students and alumni of the college. Thus as he is the one called to fill the very important position of Professor of Agriculture, a brief sketch of his life will interest all friends of our institution.

Prof. Davenport was born on the farm now owned by himself and father, June 20, 1856. How true it is that nearly all of our marked men are children of parents of sterling worth, and the large majority farmers' sons. Prof. Davenport is no exception. His father earned and cleared his own farm. He is a man of marked energy, hard, good sense, and exceptional enterprise. The mother was her child's teacher till he was nine years old. That she made no mistake in this course is not only evinced in the character of the son, but in an opinion which he holds that this is the wise way to start a child on the road to an education. How much of Prof. Davenport's frank honesty, genial, kindly spirit, and thorough scholarship is due to this early, loving teacher no one can say. The young Davenport only attended district school for two or three terms, when he entered the Woodland select school, where he prepared for college. Of the pupils at this school about one-half were teachers, and the remaining fifty were either preparing for teaching or college. Thus the environment of Mr. Davenport at this time was only second to that at the commencement of his student life in its valuable influence. Nothing whets the intellectual appetite like contact with bright, earnest, enthusiastic fellow pupils. Except while in school Mr. Davenport was always

busy on the farm, and thus received invaluable aid from the neat, methodical and industrious life of his father.

Although Mr. Davenport already longed for a higher education, he had no thought of coming to this college till the winter of 1874 and '75. Then one of our students, in the rôle of a book agent,—book agents do have their use—stopped with the Davenports over night. Thus was aroused the desire and determination to come to the college, which, with such people, means go. Mr. Davenport entered the college in 1875, and graduated with '78. While in college he was appreciated for his enthusiastic support of every good project, for his thorough habits as a student, and for his genial, kindly spirit. This latter always reminds us of two early benefactors of this college who had much to do in influencing Mr. Davenport, and whom he, with all others at the college, dearly loved. I refer to Dr. T. C. Abbot and Hon. C. W. Garfield. While at the college Mr. Davenport was sent by his society to represent it at the General Association, which met at Akron, Ohio. He was also chosen as poet of the class for class day. Four years ago he presented the history of the Alumni at the August triennial. Immediately after graduation Mr. Davenport went back to the farm, where he remained steadily for nine years, if we except a brief period when he taught the same Woodland select school in which he himself received so much good in his early boyhood. His work in this school was very successful, as was his farm life. That farming does sometimes pay is shown in the fact that during this nine years the Messrs. Davenport paid a \$2,000 debt, improved the farm at a cash outlay equal to the debt, and bought forty acres of valuable land. As readers of the Rural New Yorker and other of our agricultural papers know, Mr. Davenport was a valuable correspondent to the agricultural press of the country during the period of his practical farm life. He was also agricultural editor of the lead-

ing paper of his county. His articles were always clear, incisive, strongly put and practical. The Messrs. Davenport at this time engaged in the dairy business and maple sugar industry, in both of which they reached well toward the top. Their butter sold the year around for twenty-five cents, and their maple product gained a wide reputation for its superior excellence.

In the year 1881 Mr. Davenport was married to Miss Emma Coats, who had been his pupil in the Woodland school. It is enough to say that in intelligence, spirit and temperament, Professor and Mrs. Davenport are truly one. Mrs. Davenport is loved and admired by all who know her. Prof. Davenport is quite right in using the pronoun we in referring to his past plans and work. How fortunate that it is so. A good wife is a tower of strength to any man.

Three or four years ago we visited Mr. Davenport at his home. Everything was neat, thrifty, and showed that thought was everywhere mixed with manual labor. At that time Mr. Davenport said that just as soon as he could arrange to do so, he was coming back to the college for a full year's post-graduate work. Not, said he, with a view of teaching, but that I may be able to secure more of pleasure and profit in my farm work. Last year this long-anticipated opportunity came. During the year Mr. Davenport studied under Dr. Beal, who says that he never had a student do more accurate, painstaking work; has read carefully the proceedings of the Royal Agricultural Society of England, making quite full abstracts of such papers as appeared to him of most value; has pursued a course of reading under the direction of Dr. M. Miles, and has given attention to physiology, and especially to the experimental work of Laws and Gilbert. As formerly, he has been interested in the Y. M. C. A., and has served as superintendent of the college Sabbath-school.

Prof. Davenport was no candidate for the

position which he has received. Indeed it was not wholly without regret that he relinquished his plan of returning to the farm. But he was the candidate of every member of the faculty, of every student here, of all the alumni who knew of his character and work; and he was the unanimous choice of the State Board of Agriculture, after weeks of most thorough inquiry and investigation, although many persons were strongly urged for the position.

As a thoroughly practical man Prof. Davenport will demonstrate in the field what he teaches in the class room. As a hard student he will give the pupils under his charge solid meat. As a courteous, genial gentleman he will attract all students to him. As one "apt to teach" he will prove that the subject of agriculture can be made interesting in the class room. At least this is what his friends expect, and confidently predict. It is a happy omen, that he comes with the hearty support of all who know him and love the institution.

Pay the Bonds in Silver.

W. S. HOWLAND, ECLECTIC SOCIETY.

During the recent discussion in Congress on the silver coinage, the old question has arisen anew: Can the United States pay its bonds in silver with honor to itself and fairness to the bondholders?

These bonds were issued during the rebellion in order to obtain money to prosecute the war. The bankers and capitalists who bought them paid for them in depreciated currency, worth at that time about fifty cents on the dollar. How could it be unfair for the government to pay these bonds in the same money which it had received for them? Certainly the bondholders ought not to deny the justice of paying them in the same money which they had used. They not only deny it, but in '71 procured the passage of an act which made the bonds payable in gold and silver coin. By this ac

they were to receive in payment for their bonds twice the price paid. Still they are not satisfied, but claim they should be paid in gold. On what grounds do they base these claims? Is there any justice in their demand? Can the government be obliged to pay in gold for the bonds which cost the holders but fifty cents. By the act of '71 the government did pledge itself, in these words, to redeem its bonds in coin: "This bond is redeemable in coin of standard value of the United States on the 14th of July, 1871." At that time silver and gold were of standard value, and were the standard coins of the United States. Those who claim that silver was not a standard coin at that time will be confronted by the fact that Congress demonetized silver in '73. Their claim would simply be that Congress demonetized silver which was already demonetized, and that is absurd. In 1871 silver was at a premium of three per cent., and if the bonds had fallen due, no one can doubt that the bondholders would have raised a great cry for silver. To-day we see gold at a premium, and now the bondholder says, "pay us in the most precious metal. We deserve liberal treatment at the hands of the government. We saved the country in time of peril." On the other hand, how about the soldiers and sailors who endured the toil, fought the battles, and won the victories of the war? They were paid in depreciated paper money, and no complaint was ever heard from the bondholders urging the claims of soldiers and sailors.

The law in regard to the payment of the bonds is laid down plainly, and the wonder is that it has not been obeyed. How can we account for this action of the government in paying the bonds in gold and allowing the silver to accumulate in the treasury. The reasons which are set forth are: It will be dishonorable to the government, and it will destroy its credit, to pay them in silver. This is the argument which the bondholders urge, and naturally we would expect them

to do so. It is for their interest that the bonds bear large premiums. The toiling millions of this land are not interested in keeping the bonds at 24 per cent. above par when they must soon redeem them with surplus revenues. The United States is the only nation that has never made a default in its promises. It has never failed to meet, punctually and fully, all its obligations since the government was formed under the existing constitution, and if it has not acquired a perfect credit by the scrupulous fulfillment of all contracts, it is useless to try longer. The only compensations which it has received for the added burdens thrown upon its citizens by an over-performance of its contracts is the interested praise of those benefited, which praise is as unsincere as it is interested. What can be done with the charge that it is dishonorable and dishonest to pay the bonds in silver worth eighty cents on the dollar?

By comparing the purchasing power of silver to-day with its purchasing power in 1871, it is found that it will now buy thirty per cent. more of the necessaries of life than it would in '71. Surely the bondholder is not defrauded in this manner. In all parts of the United States a silver dollar is received at its face value. It will buy as much produce as a gold dollar, greenback or bank-note, in any town, county, or state in this Union. Most of the bonds are owned and held by citizens of the United States, where, as has been said, the silver dollar is worth its face value, and thus for every dollar's worth of bonds the holder would receive one dollar. Why should the government show partiality in this matter? If there is any preference to be shown, grant it to the over-worked soldiery fighting on the Western borders; grant it to the rough old sailors on whose devoted shoulders rests the burden of maintaining the dignity of our people among the nations of the world. No, 'tis not dishonest to pay the bondholders in money worth to-day thirty per cent. more

than it was in '71. 'Tis not dishonest for the government to fulfill its promises in both the spirit and the letter of the law; or, in other words, 'tis not dishonest to be honest, and hence we say, pay the bonds in silver.

Farmers Should Have a Liberal Education.

J. W. WHITE, OLYMPIC SOCIETY.

There is a widely prevalent idea that even a very ignorant person can make a success of farming. This opinion is held not only by many town people, but by a large class of our farmers, especially those who have become wealthy without the aid of an education.

By looking over the history of our country we may better understand why this idea has gained so strong a foothold. There never was a nation better supplied with cheap and fertile lands than ours. In addition to crops produced, these lands have increased in value to such an extent that large profits are realized from money invested in them. Many ignorant farmers have through these advantages reached their ideal success—wealth; hence their notion that an education is of no practical importance to the farmer seems fully demonstrated to those that hold wealth in like esteem.

Some men make a business of swindling farmers out of their property; but a large per cent. of those so defrauded prove to be men that read but little, and are strongly opposed to book farming. Their ignorance of what is going on in the outside world renders them very susceptible to the schemes of sharpers.

It is shown by statistics that the present generation may live to see all our arable government lands in the possession of settlers or speculators. When this is accomplished no cheap lands can be obtained, and farmers will be compelled to reduce their estates to supply the demands of an increasing population. New methods in agricul-

ture will then come into practice, for in place of cultivating a large area, the farmer must make his little place yield profits equal to those obtained from his former large possessions. To do this easily will require a trained mind and skilled hand, for much of the success of the individual will depend upon his ability to make use of knowledge gained from others.

This is an age of monopolies and combinations. The manufacturer combines that he may secure cheaper material and increase his margin of profit. The laborer is obliged to combine for defense against the greed of the employer. Nearly all lines of business seem to realize that in combination there is power. Although the farmer is beginning to see the advantages of combining to secure some desired end, he is at present nearly powerless to help himself. If any way is devised by which the farmer may maintain his rights in these contests, there will needs be trained men in their own ranks for leaders, besides better informed masses. If the farmer intends to carry on the work single-handed he will assuredly be defeated, unless better prepared for the contest.

It may be objected that for the farmer to become educated is a waste of time and money, because from his situation he cannot make good use of his learning. Just for that reason there is no class of laboring people that would receive as great benefit from an education, because the farmer is brought into such close relations to nature that he may learn something new each day. At certain seasons of the year the farmer has considerable leisure that could be profitably spent in study. If these opportunities were improved his influence in the community and in the nation would be greatly increased.

No man has the right to live for self alone, hence all should make as thorough preparation for life work as circumstances will permit. On account of this and the changes that are gradually taking place

in agricultural methods, it behooves every young man intending to make farming his business to consider carefully how much more he will in the end be able to accomplish for self and the community by the aid of a liberal education.

If the advantages to be obtained through an education were fully appreciated by our farmers, there would not be room in the colleges of the country for the students that desired to enter. In place of the anxiety of the young men to go west and get rich there would be the desire to reach a higher and nobler success, by the elevation of their fellow laborers.

The Cutting of a Spectacle Lens.

CHAS. DEW. COLBY, DELTA TAU DELTA FRATERNITY.

To those who are not familiar with the process of cutting lenses a short description may prove interesting. The average jeweler has an idea that lenses are stamped out by machinery very similar to the method employed for stamping out lozenges in a confectioner's establishment. A perusal of this article will set him right on that point at least.

The work of cutting is all performed with a tiny fragment of a diamond, known in trade as a "spark." It is not every "spark," however, that will cut a lens, as you may take six sparks, all of which will cut plate glass, and none of them cut a lens. The spark is mounted in the following manner: A piece of 3-16 brass wire is selected, a hole drilled in the end large enough to admit the spark, which is set into the hole with the point up. The outer edge or shell of the wire is beaten inward and holds the spark firmly in place. The wire is then placed in a lathe and cut off just back of the spark; then, using the point of the spark for a center, the back of its brass cup or setting is turned hemispherical. A piece of steel wire is next selected, of the same diameter as the brass wire and the end turned, form-

ing a cup. The mounted spark is then soft-soldered into this cup and it is ready for the machine, which works automatically from a pattern, and can be set to cut larger or smaller than pattern. Before the mounted spark is put in the machine it is tested by holding the handle upright. If it does not cut in this position the handle is held at various angles and when the angle is found at which it cuts best the point is unsoldered by means of the blowpipe, and re-soldered, leaving the cutting point at the required angle while the handle is upright. When the spark is found to cut well with the handle upright it is placed in the machine for trial. The glass is placed on a pad under the spark, the pad varying in form according to the kind of lens being cut; if the lens is flat the pad is flat also; if the lens is convex the pad is concave and must be a perfect fit, the better the fit the more accurate will be the work. The pattern and glass travel around while the diamond remains stationary. The glass is raised to the spark and turned to see if the spark will cut, if it does not the stem is turned one way or the other by loosening the set screw. After adjusting it, until it will cut window glass, it is tried on a lens. Say we have a double convex lens; it is brought up to the spark and the crank turned; we find that the spark cuts going "up hill" but will not cut "going down," and we may try this spark in various positions all day and not succeed in making it cut a convex lens. It might cut on a sixty-inch focus, perhaps down to a fifteen-inch focus; from a fifteen-inch focus down to a five-inch focus it would cut "up or down hill," according to the position of the point. We want a spark that will cut from a five-inch focus to a sixty-inch focus. After we once get a size on a glass we want it to cut a lens through. They will run all the way from one dozen to two hundred dozen, and from a five-inch to a sixty inch-focus. If we can use the same point to cut a periscopic lens, that is a lens flatter on the concave than on

the convex side, and the concave side is the same curve on a five-inch focus as on a fifty-inch, so that if we get it to cut an eighteen-inch focus it will cut the rest of them from a five-inch to a sixty-inch focus. The only obstacle to overcome is the thickness of the glass. The bi-concave lens is very difficult, and it requires a very good spark to cut all kinds from a five-inch to a sixty-inch focus. They are cut "partial" and "crumbed" down to size. The "Coquille" is the hardest lens to cut; they are made by cutting pieces from a hollow blown sphere. In making this form of lens the cutting is done from the inside, and owing to the "up and down hill" form it requires the best spark obtainable. It sometimes takes two or three days to get a point ready that will cut a coquille.

After the sparks become dull they are unsoldered and reset, presenting a new angle to the work, there being from four to twenty-four angles to a spark. The great difficulty is to determine by looking at it whether an angle will cut or not. As you are unable to distinguish whether that particular angle has been used before or not, and there is no way in which to mark them, the only way to do it is to solder it in and try it, and if it does not work change it until it will. This, of course, takes time and patience. Then again, it is not every spark that will cut; sometimes in a gross you will not find more than half a dozen that will cut and sometimes not one.

The life of a spark is short, some of them lasting but one day, and once in a while one is found that lasts a year. The workmen average fifty dozen pairs of lenses per day. A good diamond will cut, on an average, 1,500 dozen pairs. The average lens measures four inches around, and a dozen pairs would measure eight feet. In cutting 1,500 dozen pairs the spark would travel over a surface equal to a piece of glass 12,000 feet long. There are exceptional sparks that cut for months; we know of one which has been

at work for fifteen months, and has nearly cut 7,200 dozen pairs, traveling about 57,600 feet. There are two kinds of sparks in use, Brazilian and African, which cost from three to five dollars each. The one mentioned above has exceptional wearing qualities and is worth fifty dollars.

S C I E N T I F I C .

Photographic Surveying.

One of the recent applications of photography in the line of scientific research has been the production of photographs from which accurate maps of the country shown in the photograph can be produced. The method of drawing maps in the field, by taking a drawing-board from point to point in the field, has been long practiced under the head of plane-table surveying. This method, although giving maps at the first operation, is in reality much the same in principle as photographic surveying, and for that reason it may be necessary to examine the principles of such surveying. In plane-table surveying the paper on which the map is to be made is mounted on a drawing board, which, in turn, is supported on a tripod, and made so that it can be rotated. The distance between two of the points connected with the survey must be measured before the operations with the plane-table can be performed; and this is also true for photographic surveying.

Knowing the distance between two points, which we will call respectively A and B, by adopting a scale, a line corresponding to the actual one can be drawn on the paper, with a length dependent upon the scale adopted. Drawing this line on the paper, which we will call A B, the operation then would be to bring the point A of the paper directly over the point A of the ground as determined by a plumb-line, and at the same time have the line A B of the paper, parallel to the line A B of the ground. When these conditions are satisfied, and the table level,

the operation of mapping may be undertaken, by drawing indefinite lines toward every object in sight that we desire located on the map.

After this work has been done at station A, the instrument is moved to station B, and set so that the point B of the paper shall be directly over the point B of the earth, and the line A B of the paper parallel to the line A B of the ground. Then proceed as at the previous station, and draw lines to every point that is desired on the map. Lines that had been drawn to the same point when the instrument was at the preceding station, will be intersected at the proper location of the point. The intersection of the lines will in that way locate all the objects required. The instrument can be moved to any station that had been previously located on the paper, remembering that when the instrument has been set, the point on the paper must be over a corresponding point on the ground. By successive removals a wide extent of territory can be mapped simply by measuring the length and direction of a single line. The method of plane-table surveying has been used extensively in small surveys, and in filling in details between stations. It is as accurate a method as can be represented by the draughtsman at work, and no more so. If lines cross each other at a small angle, even the thickness of the finest line that can be drawn may be so great as to make considerable error in its location. In practice the surveyors of the United States coast survey found it to be about equal to work done with the ordinary compass. The objections to the method of surveying with the plane-table are largely founded on the difficulty of draughting out of doors, the liability of having the paper wet or torn, and the absence of methods of checking the accuracy of the work. The plane-table is still employed to a considerable extent.

Shortly after the invention of the plane-table the camera obscura was perfected, but so far as I am aware, it was used simply as

an aid in making sketches which were never reduced to maps. The instrument, however, was used to give an idea to military commanders of the nature of a country over which an army had to be maneuvered. The instrument was moved from station to station, as previously described, for the plane table. It consisted of a lens mounted in such a way as to throw an image of the country on to a flat table. An operator sitting in a darkened room drew out this image in pencil or ink, thus producing a sketch of the region in sight of the camera. This instrument never was made of sufficient accuracy to be of value as a surveying instrument.

The photograph has long been recognized as a miniature representation of the subject photographed, and this would be distorted or perfectly true in all its proportions, dependant on the character of the lens and on the form of the camera. It must be understood, however, that the photograph itself is a very recent invention, and even to-day the art of photographing is constantly changing and improving.

The first applications of photography to surveying were made during the French and German war, in 1870 and '71, in order to produce military maps of the country. The art of photography was at that time so difficult to perform in the field that very little came from these attempts. Indeed, until within the last two or three years the art had practically not been employed, so that even to-day it is a new thing, and an application, about which there is much to be learned.

The camera for this purpose may be the same as for any kind of photography, but it must be mounted so that it can be accurately leveled, and means should be provided for photographing on the picture a plumb-line and a horizontal line intersecting in the center of the picture. These lines show the elevation of the camera and the direction of sight, with reference to the picture or photograph; they represent the intersection of two

planes, one vertical the other horizontal, by means of which we may reduce the picture, which is a perspective view, to a map which is a projection. Now in order that this reduction from a perspective to a projection drawing may be made, we must know in the first place the actual relation in size of our picture to the subject shown. We must know the position of the instrument with reference to the picture, and this will correspond to what draughtsmen call a point of sight in a perspective drawing; and furthermore, our picture must have every part in perfect proportion. Having these things given, the problem resolves itself into the production of a projection drawing from a perspective drawing.

Without entering into the principles for such an operation, which, indeed, can be found in any work on perspective, the method is very simple and is as follows: From the intersection of the horizontal and vertical line, previously described, lay off on the picture a distance, on the vertical line produced, equal to the equivalent focal length of the lens. This will give us the point of sight, and shows the position of the instrument with reference to the picture.

The actual angle between any two objects on the horizon can be found by drawing lines from this point to the two objects, and measuring such an angle with a protractor. In case the points are above or below the horizontal, the angle must be measured between their projections on the horizontal line. We can also, by a similar method, find the angle of elevation or depression as seen from this point of view. The information thus obtained is the same as that given by the plane-table; we obtain it, however, not from the actual object, but from the photograph of the object.

It is evident then that in order to locate points we must have intersecting views from points previously located. The advantage over plane-table surveying would be, that the out-of-door operations are performed

very quickly; that our photographs show the location of every object, no matter how minute, and consequently furnish us field notes complete and accurate beyond question; and, finally, the mapping may be done indoors where the draughtsmen can have every facility for accurate work. Aside from this the method of mapping would be by locating points by intersecting lines, exactly as in plane-table surveying, and further principles of operation would be identically the same.

It has been incidentally mentioned that the picture must be an exact reproduction of the object. This condition depends principally on the lens of the camera. The least imperfection of figure or shape of lens would give a distorted picture, from which an accurate map could not be made. We require then, for this operation, a lens of high order. The past summer I tested very carefully three lenses, the Morrison lens, the Bausch and Lomb lens and the Suter lens, and so far as this test was concerned they all seemed equally good. The angles, even at the extreme edge of the picture, were in every case perfect. This indicates excellent mechanical work by our opticians, and, judging from what I can learn of previous tests, much better work than was done even two years ago.

Some other considerations induced the adoption of the Suter lens. The camera lenses of best quality are invariably made of two glasses separated somewhat from each other, as in this way slight optical defects can be more thoroughly eliminated and a better and sharper picture produced. They are also ground with different radii, depending on the purpose for which they are wanted. The true form of the glass should be of parabolic section, a form impossible to secure by grinding, so the lenses are made a portion of a sphere with a long radius; in general the longer the radius the more nearly the lens would approach a parabola in section. By using two glasses, set as described, the

effect of the combination is the same as a very perfect single glass with a much smaller radius, and the imperfections are much less noticeable. The composition of the glass is also thought to affect the image, so that the purest and finest glass only is fitted for such lenses.

For surveying purposes it is important that the camera hold the dry-plate rigidly perpendicular to the optical axis of the lenses. If the plate is inclined even in the least degree, the picture will be correspondingly distorted. When the camera is level the picture must be truly vertical. To successfully carry into practice this method of surveying, the surveyor must master the art of photography in all its details. This includes a complete knowledge of the exposure of dry plates, their development after they have been exposed, and the printing of pictures after the negative has been perfected.

These arts are improving and becoming more simple and certain each year. Less and less apparatus is needed for the processes of photography, and there is no reason to doubt that the time will come when photographic surveying will be the most common form practiced by surveyors when the work is of a character permitting its use.

R. C. CARPENTER.

Natural History Society.

The meeting of the Natural History Society, on September 13, was opened by Dr. Beal, who presented some interesting facts regarding the vitality of seeds.

In the autumn of 1879 he had buried bottles of seeds of twenty-one kinds of plants. The seeds were mixed with sand taken from three feet below the surface, loosely placed in bottles and buried about twenty inches below the surface. This summer the seeds with the sand were removed to the botanical laboratory and kept moist for some time, when some of the seeds of pig-weed, black mustard, shepherd's purse, pepper-grass, mayweed, evening primrose,

smartweed, purslane, pigeon-grass and chickweed produced good seedlings. Nearly four years ago he had buried some black walnuts and acorns in well drained sand, at depths varying from a few inches to about three feet. At the end of two years some of the acorns and walnuts planted near the surface were found to have come up the summer after being planted, while those buried from eight inches to two feet below the surface had all decayed. All the walnuts deeply planted had decayed, but some of the acorns buried from two to three feet were alive. They had probably started soon after planting, as the cotyledons were exhausted, their nourishment having been used in developing roots and pushing up an ascending axis.

In August, 1889, nearly four years after planting, eight acorns were found alive, with the roots about like those dug two years before. Dr. Beal also found, with these acorns, two pupæ, that nine days after they were dug up developed into fully matured beetles. They proved to be of two different genera.

Following Dr. Beal, Mr. G. C. Davis gave a short account of the Chinese yam (*dioscorea batatas*). This plant has been growing in the wild garden three years. The stem is climbing or cumbent, and annual. It is from six to nine feet long, of a purplish color, and very tough. The leaves are opposite, of a deep, glossy green, and heart-shaped. The flowers, which are diœcious, are small, white and inconspicuous. The long, tuberous roots, which are from one and one-half to two and one-half feet long, are the most curious part of the plant. They are starchy, very brittle and remarkably white. As they descend into the ground to a great depth they require a sandy soil. They have long been raised in China and Japan as a substitute for potatoes, but the great depth to which they descend, and their brittleness, renders digging very

difficult. Hence they are not considered of much value in this country, although very hardy. They may be propagated by little tubers which occur in the axils of the leaves, or by cuttings from the upper part of the roots.

Mr. Weed read a paper on the two-toed sloth (*choloopus didactylus*) of Brazil, a specimen of which has recently been added to the museum. This peculiar animal is a mammal, belonging to the sub-class *monodelphia* and order *edentata*. Mr. Weed thought that one of the chief characteristics of the animal, slowness of motion, is largely due to climatic influences, as it is a well known fact that all inhabitants of the torrid zone are far more sluggish than those of the temperate zone. The animal lives entirely among the branches of trees, rarely descending to the ground. A Mexican farmer states that a family of sloths inhabited a clump of trees, near his house, eleven years without descending to the ground or even to the lowest branches. If caught and placed upon the ground, their long limbs and feet, so well adapted to their life among the trees, are used with exceeding difficulty, and they can make but little progress. The sloth is a true vegetarian. Young buds and shoots are its favorite food, and the older leaves are partaken of only in case of dire necessity. The three-toed sloth eats only the leaves of the cecropia tree, while the two-toed sloth of southern Mexico feeds only upon the *cancho* and Texas trees. His only drink is the milky sap of the leaves. The sloths are divided into two families, the one having three toes upon each of the four feet, while the other differs in having but two toes on each fore foot. Aside from the form of the foot the greatest structural peculiarity of the sloth is the number of cervical vertebræ, the two-toed sloth having but six while the three-toed sloth has nine.

Following Mr. Weed, Mr. C. F. Baker read a paper on "The Bedbug." This was

one of the most interesting articles delivered before the society, but was too long to be inserted in our limited space.

Many students and other readers of THE SPECULUM are doubtless receiving letters from the Inter-state Publishing House, of Chicago. All those thinking of entering the employment of that firm are urgently requested to call on or correspond with the undersigned; or before engaging themselves to at least look up carefully the standing of the Inter state Publishing House (not company).

W. W. KRAMER,
Agricultural College, Mich.

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.

BOARD OF DIRECTORS.

UNION LITERARY SOCIETY.

W. BABCOCK, JR. Editor-in-Chief, . . . Literary Articles and Editorials.

NATURAL HISTORY SOCIETY.

A. B. CORDLEY, Science.

PHI DELTA THETA FRATERNITY.

JAY R. McCOLL, College News.

DELTA TAU DELTA FRATERNITY.

B. K. BENTLEY, Athletics.

ECLECTIC SOCIETY.

R. B. McPHERSON, Colleges and Exchanges.

OLYMPIC SOCIETY.

W. A. FOX, Personals.

C. F. RITTINGER, Business Manager

F. W. ASHTON, Asst. Business Manager.

SEC. H. G. REYNOLDS, Treasurer.

AGRICULTURAL COLLEGE, OCT. 10, 1889.

WE are pleased to present to our readers in this issue a fine cut, and a most complete and faithful biography, of Prof. Davenport. As one reads the story of the professor's life, he can scarcely fail to be impressed by the

fact that the whole life and training of the man has been such as to eminently fit him for the position which he occupies.

JUST subsequent to our last annual commencement there appeared in the *Ann Arbor Register* the following editorial: "The State Agricultural College has just had its annual commencement. There were 43 graduates. It would be interesting and at the same time furnish some valuable statistics if a careful record could be made of the work each of the 43 young people do during the next ten years. It would, we think, show conclusively that the purpose for which the institution was founded is realized only to a very small extent."

For what purpose was the college founded? We quote from Sec. 13 of the act of reorganization, passed March 15, 1861: "The design of the institution in fulfillment of the injunction of the constitution, is to afford a thorough instruction in agriculture and the natural sciences connected therewith; to effect that object most completely, the institution shall combine physical with mental education, and shall be a high seminary of learning, in which the graduate of the common school can commence, pursue and finish a course of study terminating in thorough, theoretic and practical instruction in those sciences and arts which bear directly upon agriculture and kindred industrial pursuits."

Of the 386 students now living 98 are farmers; eighteen, professors of agriculture and related sciences; twelve, horticulturists; five, stockmen; four, seedsmen; six, mechanics; four, experiment station directors; twelve, experiment station employes—a total of 151, or a per cent of thirty-nine. On page 39 of the college catalogue for 1888-9, are set forth some excellent reasons why even more graduates of the college are not farmers. After noting the fact that because of the comparative youth of the institution, the average time since graduation is but eight years, the catalogue says: "They have not

been able to lay up enough capital ahead to become independent farmers, and until they can do so they are able to turn their education to a better account as teachers." Page forty gives a table in which is shown that while the average number of years since graduation is eight, the per cent of farmers, fruit growers and apiarists is thirty-six. Considering those who graduated during the first nineteen years of the existence of the college, it is found that they have been in active life thirteen years, and that forty-two per cent are engaged in the occupations just mentioned. Thus it is shown that the alumni become farmers more as they advance in life and secure the requisite capital.

But *The Register* was careful not to commit itself by a definite assertion; it says simply, "only to a very small extent." We are sorry that it failed to state what in its opinion is a very small number. However, this is only the old cry of the radical friends of the University against the institution that has steadily developed in spite of frantic efforts to cripple it.

NOT long ago the plastered walls of Williams Hall corridors were carefully patched in several places, but the masons had scarcely left when some wretch proceeded deliberately to deface the new work with huge scrawls, dates and monograms. The young men who are capable of such outrages have no business at college; and though they may never be discovered, they may rest assured that their actions are condemned by their fellows. We as students should take all pride in keeping the halls neat and orderly, but if we make no effort ourselves we can scarcely expect the faculty to do it for us.

Another fact to be carefully considered is the matter of orderly conduct in the dormitories. There has been a growing tendency toward disorder in the halls, not from any wish to disobey the rules, perhaps, but because of carelessness or a desire for sport. Boxing has become a favorite pastime and

in the excitement of the contest the crowd is sure to disturb the whole building with yells and laughter. The matter of singing and whistling, also, has grown to deserving serious attention. Students seem to regard themselves under no obligation to pass quietly from room to room or from floor to floor. So soon as the hall is reached boys who are never known to sing or whistle anywhere else at once begin a most disturbing racket. Ward officers are in a great measure at fault, for they have neglected their duty, and there seems, also, to be no co-operation among them.

Boys, we have been entrusted with the government of the halls, then let us properly govern them. Let each student strive to preserve the good order of the dormitories, and each will secure a direct benefit thereby. Let each student begin by keeping himself quiet, and good order is sure to be the result.

COLLEGE NEWS.

Mr. Peebles is very sick at Detroit.

The filling of the silo has been completed.

E. G. Lodeman, '89, expects to be here Christmas.

The senior orations commenced the 18th of September.

Thirty new specimens have been put into the botanical museum.

Jack Frost has been raising havoc with the corn. The crop is very poor, anyway.

Prof. Davenport has moved into the house left vacant by Prof. Johnson, September 24.

Repairs have been made on the Botanical laboratory to prevent the leaking over the windows.

College exercises were closed one day, Thursday, to allow the students to attend the state fair.

A coyote, or *Canis latrans*, for the Entomological department has been procured from Kansas.

The college records show the roll of students to be 268, three more than at any one time heretofore.

A considerable amount of repairing has been done in Williams and Wells halls—especially in clubs "A" and "B."

Prof. Davenport's father and mother were the guests of Professor and Mrs. Davenport over Sunday, September 29.

The museum has a small addition in the line of large sponges, sea-urchins and star-fish, and a large *diodon*, or blow-fish.

The Y. M. C. A. have had three bulletin-boards made. They are put up in Williams and College halls, and the library.

G. C. Davis and H. E. Weed, of '89, and K. Shoshima, a graduate of the Sapporo college, Japan, are taking special courses in entomology.

Pres. Clute addressed a large crowd at Tibbits' park, Coldwater, on September 14. He also gave an address at a fair at Bad Axe, October 2.

Several of the students and assistants expect to stay here this winter. The problem that is yet unanswered is, where will they board? Can some one solve it?

The "Ioto," the steam yacht built by the Delta Tau Delta boys, arrived safely at Detroit after its trip around the lakes. Its crew report a very enjoyable time.

The Y. M. C. A. gave a reception to the new students on the 5th of September. One new feature was the attendance of the Y. W. C. A. of Lansing in a body.

Word comes from Hon. C. W. Garfield that in his opinion the college has done nothing to advertise it more favorably than this fall's exhibits, unless, perhaps, it be through institutes.

The new forcing-houses are about completed. They will be heated by *Furman* boilers, made by the Herendeen Company, Geneva, N. Y. One will be heated by steam, the other by hot water.

On September 10th the State Board appointed P. G. Holden, '89, as assistant in the experiment station of the agricultural department, and E. A. Burnett, '87, assistant on the farm department.

A special class in advanced German has been organized under Prof. Anderson. They are studying "Hermann and Dorothea," and meet from 7 to 8 o'clock P. M. on Mondays, Tuesdays and Thursdays.

Dr. Kedzie attended the meeting of the American Association of Agricultural Chemists held at Washington. Of the forty-five agricultural chemists of the United States, thirty were present at the meeting.

The bear which has attracted so much attention from students and others has been killed for the museum. It has broken loose several times and its further captivity would probably have been accompanied by considerable risk.

Three interesting lectures have been given this term. Secretary Reynolds, September 4, on his travels in Egypt; Prof. Durand, September 18, on "The Modern War-Ship;" and Lieut. Simpson, October 2, on "Our Nation's Wards."

The following promotions for first and second lieutenants have been made in the Military Department: For first lieutenants, T. R. McClure, B. K. Bentley, H. J. Hall and A. L. Waters; for second lieutenants, E. J. Rowley, O. A. Turner, J. H. F. Mullett, Geo. Kinsey and H. E. Bunce.

The new Agricultural Laboratory is under construction. It will probably be enclosed by cold weather,

and is to be finished by spring. It will be nearly square, and will contain a class-room, offices, rooms for the State Board, museum, and seed-room. The heating to be used is hot water.

Several volumes have been added to the library. They may be enumerated as follows: Purchased, twenty-eight; donated, four; from the bindery as bound periodicals, forty-one. Aside from these five catalogues of educational institutes and numerous reports of experiment stations have been received.

A project is on foot to procure a building for the college exhibit at future state fairs, to contain the whole exhibit. Four good benefits present themselves in its favor,—a chance is given for the college to show how to make a building and how to put up a collection; it will be a better advertisement for the college and an advantage to the fair.

Something under 150 certificates to the Bathing Association have been sold, with prospects of a good many more, as the house is now in operation. It was used first September 28, and by the rules adopted by the Students' Organization it is to be open on school days from 5 to 6 P. M. during spring and fall terms, and from 4 to 5 P. M. during summer term; on Saturdays it will be open from 10 to 12 A. M. and from 2 to 4 P. M., and on Sundays from 9 to 12 A. M.

In the *Morning Oregonian* of September 21st is given an account of the Oregon state fair, held at Salem, and one interesting part is the exhibit of the State Agricultural College. Prominently in it were 75 varieties of potatoes, 40 varieties of corn, and a large variety of tomatoes, grains, beans, peas, grasses, onions, buckwheat, and clover. The collection was under the personal supervision of Professors E. Grimm and E. R. Lake. It is the first exhibit of the college, and receives commendations from all quarters.

The Mechanical Club met on September 6, when the following interesting programme was rendered: Curious methods of travel, L. W. Spaulding; Wood alcohol, Wm. Enders; The Eiffel tower, W. Paddock; Select reading, Dennis Miller; The bicycle, Frank G. Clark. A project is on foot to admit this society on THE SPECULUM board. If admitted it will probably be represented somewhat similar to the Natural History society. It occupies about the same position to the Mechanical course as the Natural History society does to the Agricultural course. Its good standing for more than one year makes it eligible to the board.

On Thursday, September 19, Prof. Anderson's venerable father, on going out for a little stroll, lost his way. Wandering across the fields back of Mr. Palmer's house and opposite the entrance to the college grounds, he went on until he reached the road going north, and set out in that direction, instead of going toward the south, as he should have done to reach the college. He passed across Chandler's swamp apparently without seeing any one on the road, and without being seen by any one, and it was not until he was some ten miles or more away from the college that he met someone who told him that he was, as he ex-

pressed it, "off his beat." When he found out where he was, he was weary and the hour was late, and so he made up his mind to seek a lodging for the night at some farm house. He spent the night at Mr. Larrabee's, in Larrabee's Lane, and next morning set out on his return. Meanwhile, when the dinner-time passed on Thursday without bringing the father home, the son began to search, first on the grounds, and then outside through wider and wider circles. When at last Prof. Anderson found, south of the college, some men who said that they had seen a person answering to the description of his father, it was only after hours of unavailing search, carried on far into the night, with the aid of parties of students and instructors, that the clue was proved to be a false one. This evening search, however, revealed on Mr. Palmer's place a new clue, and a track leading across the fields. Soon after 5 A. M. on Friday, Profs. Anderson and Noble set off across the field toward the north road to make a thorough examination in that direction, but could find no trace of the wanderer. At 7 A. M. the students and teachers met at the chapel. All the colleges exercises were suspended for the day, and searching parties were organized, some going in carriages and some on foot. As Profs. Anderson and Noble were returning from an apparently unavailing search, they met Messrs. Stewart, Cook, and Weed, and directed them to take the north road across the swamp. Again on meeting Mr. Woodworth they directed him to make a circuit toward the east. Mr. Stewart soon returned with tidings that Mr. Anderson, Sr., had been seen the day before to the north of the swamp, and Mr. Woodworth having by this time returned from his circuit toward the east, drove, with Mr. Cordley, rapidly toward the north, and was not long in finding the object of all this search resting by the wayside, after having set out on his return. Prof. Anderson and family are very grateful to all who aided in any way in the search, especially to those who engaged so cheerfully in that long and weary night search, and to those who tramped so far without their dinner on Friday.

The Mechanical exhibit at the State Fair and at the Detroit Exposition was full and complete. At the State Fair the specimens of wood-turning attracted much attention, and the numerous inquiries from visitors kept three attendants busy answering them. At Detroit many machinists complimented the skill shown in the making of the two lathes, a pair of surface-plates and a three-horse power engine. At both exhibitions the showing made by the Mechanical Department attracted much notice, and from the numerous questions with regard to the Mechanical Course it can be safely predicted that next year a large class will enter. Under the constant supervision of Prof. W. F. Durand the department is steadily being improved, and the students follow the same line of work they would in any machine shop. The thing most needed now, to make this course complete, is a more extensive foundry and moulding room. If such facilities could be furnished, the complete process from the design to the finished machine

could be carried on, and thus give the student a chance to study the whole course of machine construction. Among the many attractive displays at the State Fair that of the Entomological Department received many favorable comments. The four cases of butterflies from the celebrated McMillan collection attracted more than usual attention. Their bright colors caught the eye of the small boy, and were even pleasing to the older people. The eight cases of injurious insects common in this state received praise from the fruit growers and farmers. In connection with these one case was arranged to show the brighter colored forms found in the state, while another illustrated the seven orders of insects. All were neatly labeled so that every one could tell upon what they worked. In connection with the insects, and adjacent to them, were shown the insecticides used to destroy these pests. A placard placed in a conspicuous position gave the desired information concerning the application of the remedies. Drawings made by the students formed part of the attractive display. In connection with these the department showed specimens of the honey plants, and specimens of honey from nearly all of them. The exhibits of the Chemical and Physical Departments were shown together. Among the apparatus shown was quite a complete assortment of instruments for electrical work. A delicate astatic galvanometer was in circuit with a thermopile, and placed in position so that any one could investigate the effect of heat on the pile. There was shown a large tangent galvanometer, a reflecting galvanometer, Eaton's voltmeter and ammeter, and three sets of standard resistance coils of different patterns. Among other apparatus was a battery of Leyden jars arranged in cascade, a magnetic interrupter in Shunt with Hoffman's water decomposing apparatus, Faraday's electrical wheel, Arrago's electrical apparatus, a fine spectroscope (Browning), Soliel's saccharimeter, an exceeding delicate chemical balance, a cathetometer, Norrember's polarizing apparatus, Pyroheliometer (Ducretet), Diffraction Grating (Rowland), radiometers, set of models of diamonds owned by crowned heads of Europe, set of government standard weights and measures, set of sunshine recorders with charts showing amount during growing season, rain gauge, soil thermometers, balancing and self-registering thermometers, samples of crops grown on the plains at Grayling, also of soil from Grayling, samples of commercial fertilizers, and crude material used in their manufacture. A pair of pendulums oscillating at right angles, from which the resultant of the motion of the two was obtained, attracted considerable attention. The Botanical Department never fails to do its share. Evergreens were shipped from Grayling, and all the species found in the state were exhibited. As far as possible slabs of the full-grown trees, showing the bark and wood, were placed near the others. These trees, which were about ten feet high, and the shrubs and cones, were neatly arranged along the north side of the hall. Among other things of interest were the large photographs of the lumber

camp and timber of Northern Michigan; twenty 2x2½ feet drawings, made by the students, showing the leading injurious fungi, and six large framed drawings. The exhibit of the Horticultural Department covered about one-half of the south side of the Fruit hall. There were five shelves rising like a flight of steps, and on these were arranged plates of each of the varieties of tomatoes (about 150 in number), grown on the college grounds; also different varieties of potatoes, specimen hills of same varieties with various fertilizers, different varieties of peas, different varieties of apples, and apples treated with the different remedies for prevention of the scab. On the broad lower shelf were shown the large vegetables, such as squashes, cauliflowers, etc. The wall was decorated with ten frames filled with photographs of vegetables, and was festooned with strings of onions, bunches of sweet corn, etc., all arranged in such a manner as to do credit to the good taste of Mr. C. S. Crandall, under whose direction the exhibit was arranged. A short description of the fine exhibit made by the Veterinary Department at the State Fair will be of interest to many. A horsakin of paper, manufactured in France, separates into 97 pieces and shows 3,000 anatomical objects; skeletons of an ox, sheep, hog; bones of various parts showing all the different sorts of diseases, of bone-spavin, ringbones, bony tumors, splints, buck shins; bones showing parasitic diseases, diseases of joints, diseased teeth; broken bones showing manner of healing, and illustrations of all the parts and various bone diseases of domestic animals; a paper foot of a horse that could be taken apart, and people looked in wonder at such a curiosity; also the natural size and form of the heart, brain, lungs, liver, kidneys, spleen, pancreas, and all the viscera of a horse; teeth showing all the different ages of the horse, and a jaw bone containing the teeth of a race horse fifty-four years and three months old. A large number of instruments and appliances used in veterinary science and surgery were on exhibition. Great interest was taken in this exhibit by farmers—so much so that many requests were made to send it to the Grand Rapids fair, from whence it has just returned. Nearly all of the departments were equally well represented at the Detroit Exposition, and some of them much better than at the State Fair. At Detroit the entire exhibit from the college was together, and occupied a space 100 feet long across the west end of the Exposition building. The extent and neat arrangement of the exhibit give much credit to the College, and many learned for the first time the many excellent conveniences of the Agricultural College.

Ex-President White, of Cornell, is vigorously urging the establishment of a National University at Washington. It is certainly an admirable location for a great university. Should this idea be carried out, it could easily be made to America what the University of Berlin is to the European Continent.

Yale College has a new fence, which promises to be even more popular than the old one.

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 this department, often, thus making his work much easier and the department more interesting to all.

'61.

A. Bailey is farming near Troy, Mich., and reports a successful year.

WITH '61.

J. W. Knapp of Bellevue, Mich., was a prominent exhibitor of Polled Durhams at the Detroit Exposition and carried off nearly all the prizes on that breed. He expresses the greatest interest in the M. A. C., and subscribes for THE SPECULUM.

'64.

Lewis Vanderbilt of Pittsville, Cal., has been re-elected surveyor of Hassen Co., also director of irrigation.

'66.

C. H. Watson, for many years the book-keeper of the Northwestern Life Insurance Co., has been appointed assistant secretary of that company.

'71.

Prof. Byron D. Halsted was appointed by the Governor of New Jersey as one of three delegates from that state to the American Forestry Congress to be held October 15-18, at Philadelphia. The professor spends his leisure time lecturing on Economic Botany at farmers' meetings.

Prof. E. M. Sheldon has accepted the position of Secretary of Agriculture of Queensland, Australia. He will leave for his new home about January 1.

'73.

I. H. Harris of Bathgate, North Dakota, is engaged in the elevator business, buying and shipping wheat to Minneapolis and Duluth.

G. E. Kedzie is residing at Ouray, Colorado, with his wife and two children, a daughter and a son. He is manager of the Calliope silver mines, which are at present paying a dividend of ten thousand dollars a month. He was quite recently appointed State Geologist.

'74.

Geo. W. Mitchell of Newburg, Oregon, attended the Exposition at Detroit. He represented the Newburg Agricultural Society, and brought with him an exhibit from Oregon consisting of grains, grasses, fruits, mounted pheasants, grouse, elk, etc.

Henry Haigh has just returned from his trip to Europe. If our friend keeps on at this kind of work he will become as fat and plump as an alderman.

Augustus S. Hume is a prominent farmer near Lansing, Mich.

C. L. Ingersoll has been elected Vice-President of the American Association of Agricultural Colleges, at the annual meeting held at Knoxville, Tenn.

'75.

C. S. Ingersoll is attorney-at-law and insurance agent at Garden City, Kansas, and is getting there in every particular.

'76.

H. S. Hampton is no longer a bachelor. He was married October 10, 1887, and has a little girl over a year old. He was a member of the Idaho Constitutional Convention, which recently held a meeting at Boise City. He sends us a copy of the Constitution as drafted by that august assembly. Mr. Hampton has changed his residence from Albion to Shoshone, Idaho, where he is practicing law.

Donald H. Kedzie is editor of the *Lordsburg Liberal*, at Lordsburg, New Mexico, and postmaster at the same place. He is still a bachelor, at the age of thirty-three; dabbles somewhat in politics, and is engaged in mining enterprises. He sends for nine College song books. Say, Don, are you intending to start a Greaser Glee Club?

'77.

A. C. Peebles, formerly a clergyman at Fargo, Dakota, but lately taking a post-graduate course in chemistry at the M. A. C., is reported to be very ill at Detroit. Mr. Peebles went to the Exposition and was attacked by pneumonia while there. Mr. Peebles has shown himself to be a gentleman of rare merits, and as a consequence there is no one that the boys regard with greater respect than him. We hope for the best.

'78.

J. Troop still holds the position of Professor of Horticulture and Entomology at Purdue University, Lafayette, Ind. He says, "A little daughter of eighteen months comprises the youthful portion of our family. Find enclosed one dollar to credit on SPECULUM." We presume the business manager would smile from ear to ear if a number of others were to follow suit.

Geo. E. Breck, one of the firm of the Cleveland Bay Horse Company, represented the firm at the Exposition, where they captured many premiums. He intends to go to Europe soon to make another importation.

WITH '78.

Evert S. Dyckman has been a fruit grower for about two years, at South Haven, Mich.

'79.

A. A. Crozier is at Ann Arbor, Mich., preparing a dictionary of botanical terms.

Louis G. Carpenter was recently elected a Fellow of the American Association for the Advancement of Science. At the recent sitting of the U. S. Senate Committee on Irrigation, Prof. Carpenter's report was

very highly commended by the members of the committee.

Chas. E. Sumner writes, "I am practicing law at Toledo, Ohio. My home has lately been blessed with a little girl."

C. W. Gammon, who left the farm two or three years ago, has returned to the farm at Courtland, Cal.

WITH '81.

Our friend Vinton, of the firm of Vinton & Co., contractors and builders, constructed all the buildings on the Detroit Exposition grounds. It was certainly a gigantic work, and the manner in which it was done is deserving of the highest praise.

'82.

A. J. Chappell writes: "I am at Alba, Mich., teaching school, having sold out the drug business at Pinckney, Mich. I enjoy teaching, and am pleased with the country and pupils.

W. E. Hale, of Eaton Rapids, was here at the picnic from that place, August 7.

W. L. Snyder is still chemist for the Michigan Carbon Works of Detroit. Friend Snyder has not forgotten to be doing good, as he is superintendent of one of the largest Sabbath-schools in the city.

'83.

John T. Matthews writes from Ithaca, Mich.: "My present occupation is the practice of law at Ithaca. I have been in the business about four years, and am delighted with it as a business. I have a wife, a boy, and a happy home." We understand that J. T. is succeeding finely.

'84.

O. L. Hershiser was Superintendent of the Apiary Department at both Buffalo and Detroit, and won great credit for the manner in which he conducted the department.

Chas. Atchinson is engaged in the farm loan and insurance business at Alliance, Neb. He has been thus employed for two years.

William Thum, for eight years an enemy to the pesky fly, is a manufacturer of fly paper at Grand Rapids, Mich.

Wilford C. Stryker has wandered to the far-off garden of the west, and is at present engaged in the drug business at Los Angeles, California.

Married, September 12, 1889, Llewellyn Bonham to Miss Frances McFarland, at Oxford, Ohio. Shake, old boy, we're yours without a struggle.

'85.

Dorr J. Stryker has been shooting liver pills for J. C. Ayer & Co., Lowell, Mass., for about a year.

Elwyn T. Gardner has been, for the past three years, a dealer in hardware at Arcadia, Neb. For the last year he has been trying to employ the principles of practical agriculture imbibed at the M. A. C.

It is with sorrow and reluctance that we record the

death of F. C. Paine, which occurred August 6, 1889, at Omaha, Nebraska. Up to within one year of his death he held a very responsible as well as remunerative position in the National Bank at St. Johns, Mich. Health failing him, he went west to recruit. He leaves hosts of friends to mourn their loss.

G. C. Lawrence has not lost interest in the old M. A. C., for he came down with money in advance for THE SPECULUM. Glenn is a pedagogue.

T. D. Hinebauch says, "My work on Veterinary Dental Surgery goes to press this week, September 9, and will be ready for distribution October 1, 1889."

C. H. Hoyt, of Hastings, had an apiary exhibit at Detroit Exposition.

'86.

W. E. Gammon is still on his mother's farm at Courtland, Cal. The receipts of the farm of 100 acres, for the past year, have been over \$7,000. It pays to farm in such a country.

A. L. Nichols has quit farming and taken the profession of teaching. He began the school year at Hickory Corners, September 2.

W. R. Rumler of Spokane Falls, Washington, attended the Great Fair.

'87.

E. A. Burnett is assistant in Agriculture at the College, and is giving complete satisfaction.

W. C. Sanson has commenced a winter school at Clifford, Mich.

L. Colburn is Assistant in the Mechanical Department. Luke is just the kind of material we want here.

Clark Hubbell is studying law at Port Huron, Mich.

WITH '88.

Hamet. R. Case is a civil engineer, and acting chief draftsman for the Pacific Short Line, at Sioux City, Iowa.

Howard A. Knevels has been in the book business at Elkhart, Ind., for two years.

'89.

W. S. Palmer has obtained a position in the Ypsilanti High School, in the department of Natural Science. He reports plenty of work, and everything lovely.

P. G. Holden has secured a position on the Agricultural Experimental Station. Perry gets there just the same.

W. E. Rohnert was one of the special policemen at the Detroit Exposition.

WITH '89.

Chas. Hemphill has secured a position in the Savings Bank at Ypsilanti.

WITH '90.

C. E. Burns is working for the Michigan Central, with headquarters at Detroit.

ATHLETICS.

Saturday, September 14th, the College nine played a game of ball with the Albion City nine, and were beaten by a score of 4 to 5. The loss of the game was due principally to poor base running, otherwise the game was well played, being remarkable for a scarcity of errors, a thing which has not characterized the playing of our team during the past season. The features of the game were the battery work of both clubs, and the batting of Gardner and Cordley. The score was as follows:

AB	R	BH	SB	PO	A	E	AB	R	BH	SB	PO	A	E		
Cordley, l.f.	5	0	3	0	2	0	Anderson, ss	5	1	1	0	2	2	0	
Burnett, p.	5	1	0	0	6	3	0	Hoyt, c.	4	2	2	0	3	0	0
Hall, 3 b.	4	1	1	0	1	1	0	Springer, 1 b.	3	1	0	0	7	0	0
Foster, s. s.	4	1	1	0	2	2	0	Tompkins, 2 b.	4	1	1	0	3	0	0
Wilson, c.	4	0	0	0	4	5	0	Dascom, c. f.	4	0	1	0	2	0	1
Gibbs, 2 b.	3	0	1	0	4	3	2	Gale, p.	4	0	0	0	1	2	0
M'Arthur, c. f.	4	1	0	0	1	0	1	Austin, r. f.	4	0	1	1	2	0	1
Weid'm'n, r. f.	4	0	0	0	1	0	0	Allen, 3 b.	4	0	1	0	3	3	0
Gardner, 1 b.	4	0	3	0	7	0	1	Bartley, l. f.	4	0	1	0	4	0	1
Totals,	37	4	9	0	27	14	4	Totals,	36	5	8	1	27	7	3

Earned runs, M. A. C., 2; Albion, 3. Two-base hits, Gardner, 3. Double plays, Allen to Springer. Base on balls, Gibbs, Springer. Passed balls, Wilson, 1. Wild pitches, Gale, 1; Burnett, 1. Left on bases, M. A. C., 6; Albion, 4. Struck out by Burnett, 7; Gale, 3. Time of game, 2 hours, 10 minutes. Umpire, Laud.

As it is getting rather late in the season, now, and the weather uncertain, this will probably be the last game this year. The club closes the season in good shape, financially speaking, and well provided with hard-working players, who will do all in their power to keep up the reputation gained by the club during the past four years.

The class in gymnastics, under the leadership of Mr. Polhemus, is making fine progress in athletic training. The embryo athletes give evidence of developing into the more mature form, when they will be able to bring honor to the college and much credit to the athletic department. Mr. Polhemus deserves much credit for the skill and judgment with which he handles his class, and the enthusiasm which he inspires in them for their work. He not only instructs them in the performance of the different athletic feats, but also in the physiological benefit to be derived from certain kinds of training, and in the names of the muscles involved in the different movements.

COLLEGES AND EXCHANGES.

Through the three months just passed, when nearly all of the colleges were closed for the summer vacation, the exchange table holds but a limited number of publications, and college news is at a premium. Now that these institutions are again opening their doors, we hope to furnish our readers with more news of what is being done in the college world.

Clark University, Worcester, Mass., opened courses of study in five of its departments this fall. G. Stanley Hall, formerly professor at Johns Hopkins, has

been elected president. The institution is handsomely endowed, and will no doubt prove a grand success.

At the Dakota Agricultural College, wood-carving has been introduced as part of the manual training for ladies.

Why is it that the young men who are about to take bachelors' degrees always invite the pretty girls to see them do it?

IN OUR Manufacturing

Department

We employ the

Largest force of

Skilled Designers and

Jewelers in the State, and

Have unequalled facilities for

Producing Artistic Jewelry and

Society Badges of Every Description.

Wright, Kay & Co.,

IMPORTERS & JEWELERS,

140 Woodward Ave., - - DETROIT.

WM. H. PRENTICE,

ART. G. KIEF.

PRENTICE & KIEF, Merchant & Tailors.

Fine Pantings, Suitings and Overcoatings.

Military Uniforms a Specialty.

A Perfect Fit Guaranteed.

Removed to 224 Washington Avenue South, Lansing, Mich.

SILK HATS PRESSED AND CLEANED.

FRED. W. BERTCH,

Wholesale and Retail Dealer in

FRESH AND SALT MEATS.

POULTRY AND GAME IN SEASON.

No. 333 Washington Avenue South.

Telephonic Communication.

FOR THE FINEST

Photographic & Work

—GO TO—

CASSEY & RILEY,

Over Lansing National Bank.

SPECIAL RATES TO STUDENTS.

OUT-DOOR GROUPS MADE ON SHORT NOTICE.

If you want Stylish Furniture, go to
COWLES BROS.

If you want Good Furniture, go to
COWLES BROS.

If you want Cheap Furniture, go to
COWLES BROS.

Hudson & Baird Block,
235 Washington Ave. S., Lansing, Mich.
Special Inducements to Students.

J. C. HUFFMAN, BAKER and CONFECTIONER,

Makes the Best Bread and Ice Cream.

304 Washington Ave. N., Lansing, Mich.

W. RAPPLEE,
Wholesale and Retail Dealer in
Jewelry, Watches, Clocks,
Diamonds, Silver and Plated Ware.

119 Washington Ave., Lansing.

REPAIRING NEATLY DONE.

STUDENTS FIND AT
G. W. FRARY'S STORE

A large and fine line of

GENT'S HATS AND CAPS.

IN ALL THE LATEST STYLES.

Blanchard & Beebe

SELL THE BEST

BOOTS and SHOES

AT THE LOWEST PRICES.

Call and see before purchasing elsewhere.

BLANCHARD & BEEBE,

218 Washington Ave., Smith Block.

Repairing Neatly Done.

YOU WILL FIND US

Directly opposite Hotel Downey, in one of the Best

Ground Floor Photograph Galleries

In the State. We do all kinds of work known to
the art, and always try to excel all com-
petition. We offer

Special Inducements

to all connected with the STATE AGRICULTURAL
COLLEGE.

SAVIGNY & CHRISTMAS.

DON'T PURCHASE

Anything in the Furnishing Line until you have looked through my stock. I give it My Entire Attention and am always in position to show the Latest Styles and Novelties as soon as they appear. My Hat and Cap Stock is the Largest and Most Complete in this city, and when you want Shirts, Collars, Cuffs, Canes, Umbrellas, Handkerchiefs, Hosiery, Underwear, Neckwear, Suspenders, Gloves, Mufflers, in fact anything in the way of Nice Furnishings you will find it in my stock. Always pleased to show my stock, even though you do not wish to purchase. Students' patronage respectfully solicited.

ELGIN MIFFLIN,
THE FURNISHER.



231, 233, 235, 237 Washington Avenue S., LANSING, MICH.

THOROUGH, WELL EQUIPPED, PRACTICAL.

One of the finest suites of Rooms in the Country and a large, wide-awake Faculty.

DEPARTMENTS: Commercial, Short-hand, Elocution, Type-writing, Normal, Penmanship.

Expenses low. Don't decide to go Elsewhere until you have sent for our Year Book.

JOHNSON & MINER, Proprietors and Managers of the Michigan School Bureau.

L. BECK,
THE CLOTHIER.

Headquarters for Fine Clothing

Hats, Caps and Gents' Furnishing Goods
a specialty.

STUDENTS and OTHERS, Give us a Call!

112 Washington Avenue North.

WILL IT PAY

To give \$3.00 per dozen for Cabinet Photographs, when we **POSITIVELY GUARANTEE** just as good for \$2.00 as can be had in the city of Lansing. Special rates to all connected with the M. A. C. We solicit a trial, which will be Free of Charge if not Perfectly Satisfactory.

Cheney & Lawson.

The M. C. Lilley & Co.

HEADQUARTERS FOR

MILITARY GOODS OF ALL KINDS.

REGALIA SUPPLIES, BAND EQUIPMENTS, AND
UNIFORMS OF ALL DESCRIPTIONS.

Special Inducements to Students and those getting up Clubs or Companies.
COLUMBUS, OHIO.

L. D. GOSS,

THE ONE-PRICE CASH SHOE DEALER, Respectfully Solicits a share of your patronage. Special Prices given to Large Orders. Corner opposite HOTEL DOWNEY, LANSING, MICH.

JOHN HERRMANN, Merchant Tailor

228 Washington Ave. N.,

Opposite Opera House Block,

Keeps the largest selection of fine Cloths
in Central Michigan.

STYLE AND WORKMANSHIP THE VERY BEST

U. H. FORESTER,

WHOLESALE AND RETAIL

Books, Stationery, Toys, Fancy Goods

THE BIG WINDOW, WASHINGTON AVE.,

LANSING, - - - MICHIGAN.

VOISELLE & LAROSE,

HEADQUARTERS FOR

Wall Paper & Decorations.

J. S. MOFFETT,

DENTIST!

Twenty-two years' experience as a Practical
Dentist. The only Dentist in Lansing who
is a graduate of a Dental College.

BRIDGE WORK OR TEETH WITHOUT
PLATES. GOLD OR PORCELAIN
CROWNS.

Office over Lansing National Bank, Lansing.

THAT CLOCK ON THE WINDOW

Is for the benefit of the public, and also to mark
the location of

B. B. MORGAN, Jeweler,

I MAKE WATCH REPAIRING A SPECIALTY.

After securing your work once, I will endeavor to keep your
patronage by doing it well.

FINE SHOES

In all Styles and Prices that are Right.

Ladies' Hand Turns in Button, Lace and Congress.

GENT'S SHOES A SPECIALTY,

—At the—

Cash Boot and Shoe Store.

104 Washington Ave. N. WOODSUM & CO.

NOTICE.—You are cordially invited to inspect our large stock of

Men's and Boys' Clothing,

Hats, Furnishing Goods and Neckwear.

Knee Pants from four to fourteen years. MEN'S \$1.00 PANTS A SPECIALTY.

Yours truly,

MODEL CLOTHING HOUSE

109 Washington Avenue, Lansing, Mich.

FURNITURE!

A LARGE ASSORTMENT OF

Writing Tables, Desks, Chairs, &c.,

ALWAYS ON HAND.

EXTRA SPECIAL FIGURES TO STUDENTS.

M. J. BUCK, Opposite the Opera House.

You will find the Largest Assortment of

Fine Boots & Shoes

AT

H. A. WOODWORTH'S

115 N. Washington Ave.

Repairing
Neatly
Done.



W. H. PORTER,

First-Class Livery and Hacks.

Stables cor. Capitol Ave. and Washtenaw St.
Telephone No. 65.

BEE-KEEPER'S GUIDE,

—OR—

Manual of the Apiary.

14,000 sold since 1876. 5,000 sold since May, 1883. 15th 1,000
wholly revised, much enlarged, and many costly
illustrations added.

Price, by mail, \$1.25. Liberal discount to dealers and for
clubs.

Registered snopshires and Short Horns of the most fashion-
able strains for sale.

A. J. COOK, Author and Publisher,
Lansing, Mich.

SEELY

DRUGS, PERFUMES, SPECTACLES.

CITY HALL BLOCK,

Lansing, Mich.

CHICAGO MEDICAL COLLEGE,

Corner Prairie Avenue and 26th Street, CHICAGO, ILL.

Medical Department of the Northwestern University. Session of 1889-90.

N. S. DAVIS, M. D., LL. D., Dean.

The Thirty-first Annual Course of Instruction will begin Tuesday, September 24th, 1889, and close Tuesday, April 29th, 1890. The course of instruction is graded, students being divided into first, second and third year classes. Applicants for admission must present diplomas or certificates from recognized colleges, schools of science, academies, high schools, or teachers' certificates of the first or second grade, or sustain a preliminary examination.

The method of instruction is conspicuously practical, and is applied in the wards of the Mercy and St. Luke's Hospitals daily at the bedside of the sick, in the College Amphitheatres, and in the South Side Dispensary attached to the College, where upwards of fourteen thousand patients are treated annually. Fees: Matriculation \$5. Lectures, first and second years, each, \$75, third year free. Demonstrator \$10, including material. Operative Surgery \$5, including material. Laboratory \$5. Breakage (returnable) \$5. Hospitals: Mercy \$6, for third year students; St. Luke's \$5, for second year students; final examination \$30. No extra fees for Private Classes or Microscopical Laboratory.

For further information or announcement address

FRANK BILLINGS, M. D., Sec'y, 235 State Street, Chicago, Ill.

New England Clothing Store,

116 Washington Avenue South, LANSING, MICH.

HEAD QUARTERS FOR

CLOTHING, GENTS' FURNISHING GOODS, HATS and CAPS.

Suitings for the old and young—Men's, Youths', Boys and Children's—always in stock and at prices that defy competition. Special inducements to students.

The Largest, Brightest and Lightest Store, and the best stock to select from in Lansing.

Specialties in Gents' Fine Furnishings. Don't pass us by when in want of anything in our line. Call in.

H. RAZEK, the Low Price Clothier.

B. F. SIMONS,

104 WASHINGTON AVENUE,

Displays the Finest
and Largest Stock of

DRY GOODS

AND CARPETS

That has ever been opened in the city. You will always find goods as represented, and our prices at the bottom.

G. J. FOSTER,

—Dealer in—

Boots, Shoes and Rubbers,

320 Washington Ave., Lansing, Mich.

Lawn - Tennis - Goods, - Best - Made

JOSEPH GILLOTT'S Steel Pens.

FOR ARTISTIC USE in fine Drawings,
Nos. 659 (Crow-quill), 290 and 291.
FOR FINE WRITING,
No. 303, and Ladies', 170.
FOR BROAD WRITING,
Nos. 294, 283 and Stub Point, 849.
FOR GENERAL WRITING,
Nos. 404, 332, 390 and 604.

THE MOST PERFECT OF PENS.

Gold Medal Paris Exposition, 1878.

Joseph Gillott & Sons, 91 John St., New York.

ABER'S SHOE STORE
IS HEADQUARTERS FOR

Reliable Footwear Specialty

Gents' Medium and Fine Shoes.

When your Shoes are in distress call on

ABER.

T. H. SEDINA,

⊕ The Boss Tailor ⊕

Is making the

FINE DRESS SUITS,

Military Suits a Specialty.

STUDENTS GIVE US A CALL.

JACKSON BRO'S. "M. A. C. OLD RELIABLE BARBER."

106 MICHIGAN AVENUE, LANSING,

IS THE HEADQUARTERS FOR COLLEGE STUDENTS.

FIVE SKILLED WORKMEN EMPLOYED.

The Armstrong Military Supplies.

Swords, Belts, Caps,

Cap Ornaments,

Helmets, Chapeaux,

Shoulder Straps,



Epaulettes, Aiguillettes,

Shoulder Knots,

Sashes, Chevrons,

Clothing, Flags, Etc.

Write for our prices on any of the above goods, or on any other Military, Band, or Society Goods you may wish to purchase. **PRICE LISTS FREE.**

The Armstrong Goods Stand at the Head.

E. A. ARMSTRONG, Detroit, Mich.

261 & 263 WOODWARD AVE.

114 & 116 WASHINGTON AVE.

Michigan School Moderator.

SEMI-MONTHLY.

\$1.50 per Year. The OFFICIAL EDUCATIONAL PAPER of the State.

PRIMER OF MICHIGAN HISTORY,—W. J. Cox, 112 pp., cloth, 40 cts.

CIVIL GOVERNMENT OF MICHIGAN,—H. R. Pattengill, 96 pp., cloth, 30 cts.

MANUAL OF ORTHOGRAPHY AND ELEMENTARY SOUNDS,—H. R. Pattengill, 64 pp., 30 cts.

THE MODERATOR one year, and any one of these books, \$1.65.

Address H. R. PATTENGILL, Lansing, Mich.