

THE SPECULUM.

VOLUME X.—No. 3.

AGRICULTURAL COLLEGE, MICH., OCT. 10, 1890.

WHOLE NO. 49.

The Aster.

Along the quiet lanes that lead
To lonely fields afar,
Thou strewest with a lavish hand
The light of thy white star.

Beside the fences' mazy length,
Amid the tangled grass,
Thou spread'st thy wealth of skyey gems,
To gladden all who pass.

Along the marge of oozy swamps,
Amid the shining show
Of sun-flowers and of golden rod,
Thou throw'st thy purple glow.

In snowy white, in skyey blue,
In purple rich and rare,
More royal thou than any queen,
Than any bride more fair.

Thy tints that pulse in purple tide,
Or whiten like the snow,
Or bathe the fields in softest blue,
An artist's hand do show.

An artist's hand? The artist, then,
Hath shaped thy queenly grace,
Hath laid, with touch divine, the tints
That gladden in thy face.

So, whether white in winding lanes,
Or blue by broidered fields,
Or purple in the wild swamp's marge,
His praise thy beauty yields.

O. CLUTE.

[FOR THE SPECULUM.]

Autumn.

There is beauty and pleasure in winter. When one awakes on a frosty morning and finds the landscape whitened, the trees bowing under their burden of snow, he can not help exclaiming at the beauty of the scene. The jingling bells sing ever of joy.

Or in the spring, when the green leaves peep out from their warm hoods to greet the modest spring flower, when the cattle first find a bit of herbage to satisfy them,

when the sun shines warmly and the birds sing gaily, it is a joyous time.

Or when the hot, lazy, summer days come, and you sit in the shade of giant trees and overlook the boundless sea, and watch the great ships silently pursue their long journeys of trade and commerce, or see the quick yachts that bend to a favoring gale, life seems good.

But to me autumn is better than all. The time of the "sere and yellow leaf" has beauties that no other season can have. The cold wind blows from the north. The yellow of the white-wood, the red and brown of the maple, the deep crimson of the oak deck the dying forest. How gorgeously does Nature die! Her shroud is her richest garment. Then the juicy apples are all in the cellar, promising many a later treat. The crops are all gathered. The cattle keep the shelter of the straw-stack. The traveller buttons his coat about him as he rustles the dead leaves in his path. All tells of death, all is melancholy, yet I like to sit by a warm hearth, eat of ripened fruit, and let melancholy rule my spirit. There is sadness, but not hopelessness. There is death, but promise of life. Nature dies as man should die, when too ripe to live. Death is always mournful, yet there need be no despair. The wind wails in autumn, but the leaves are beautiful. The day is dreary, yet man talks with Nature and is soothed to quiet by the beauty of her canopy of Death.

Differences in Musical Taste.

R. C. BRISTOL, PHI DELTA THETA FRATERNITY.

It does not seem strange that there is a great diversity of musical taste, when we consider the great number that are affected

by music. It is unlike most other arts in that it is not confined to the enlightened world; but is found in some form everywhere in the universe. Not only is it known to all races of men but most of the higher animals are more or less affected by it. No one ever heard of cats and dogs painting pictures, or of horses that admired bouquets; but we hear many interesting things as to their appreciation of musical sounds. Savages in plundering a country or a city do not save the works of art, but most of them are as much affected by music as more civilized people.

Travellers coming in contact with the savages of remote lands have from time to time made mention of the state of music among them and its effect upon the people visited. Of course the quality of the music, if judged by our standard, would be very low, and the instruments used of the rudest kind; but comparing their intellect with ours, the effect produced on the mind and emotions was found to be of about equal force with that of our more fully developed art. From this we may conclude that music is not dependent upon a high state of cultivation for its power over the human mind. On the contrary, we may infer that music cultivated beyond the appreciation of its listeners loses power nearly in proportion to the degree of advancement that places it above their ability to understand. The savage derives more pleasure from the rude performance of native musicians than he could from more cultivated music. He enjoys the beating of tom-toms and the wailing of pipes because he understands the sound language in which they address themselves to his emotions. What sounds uncouth to us is a source of delight to him, because it is in unison with his feelings and within his power to comprehend. It is not much different with us, for most of us enjoy music best that we can easily understand and grasp with little effort. Thus it comes that many simple songs and tunes, that musicians discard as trash, are better known and have had

more effect upon the mass of people than most of the higher forms of composition. The old farmer that goes to hear a grand opera is usually disappointed and comes away wondering what there is that people think so charming in "this new fangled music." The genuine lumberwoods song is set to a tune peculiar to itself. It is in a monotonous minor key that is very easy for an uncultivated male voice to sing in and is very characteristic of the society in which it is enjoyed. The drone of the bag-pipe does not charm a person that is accustomed to hearing good music, or good as we judge it; but some Scotchmen think the bag-pipe the king of instruments. And so it is with the most of mankind; everyone has an idea of music as it pleases them individually and many seem to think that the taste of everybody else should be the same as their own. There are a few people who do not naturally care much for music and go to classical concerts because it is fashionable, and thus coming in contact with the best music soon learn to like it and then are quite ready to think that anyone who does not enjoy it is quite destitute of taste. Others with still less taste for music but with more honesty, who have heard plenty of good music and trusted to musicians' judgment as to what they should listen, will still tell that Wagner's music must be better than it sounds. The only way for every one to enjoy classical music is to study it and so many are doing so now that the musical standard among the people in general is rapidly being raised.

The perception that animals have for music is not so definitely known, but many of them are very ready to show their likes and dislikes on the subject. Some are attracted by music and will listen to the sounds of instruments quite attentively. Education makes a great difference oftentimes. Some dogs, when brought up in a musical family, will listen to music with great delight, and have been known to go to church with the family every Sunday for

the obvious purpose (?) of listening to the solemn tones of the organ. Other domestic animals are often appreciative of some kinds of music and it is thought to be beneficial to them. It has been said that the song of the shepherd had as much effect on the condition of the flocks as did the quality of the pasture. A former Duke of Portland, who kept a number of fine horses and was a firm believer in this principle had a music gallery constructed in his stable and engaged musicians to give weekly concerts for the benefit and amusement of his horses.

Birds, it is well known, are susceptible to music. Most of them are not only good listeners but are fair imitators. Owls are about the only exceptions. They are said to have an aversion to music of all kinds and to die in convulsions if compelled to listen long.

All creatures that dislike music are unfortunate. A person who has a taste that is never satisfied, who has musical ideas so different from other people's, that most music distresses him, will be included in this class. Also the college student who is annoyed by the elementary efforts of his neighbor. The worst cases may be well described as Shakespeare says:

"The man that hath no music in himself,
Nor is not moved with concord of sweet sounds,
Is fit for treasons, stratagems and spoils."

Physical Training.

E. H. POLHAMUS, ECLECTIC SOCIETY.

"If any man defile the temple of God him shall God destroy, for the temple of God is holy, which temple ye are."

"Holier than any temple of wood or stone, consecrated to divine right and divine purpose, is the human body."

Though all that is good has been said before,—though all that is noble has been thought before, can there be less need of re-saying the good, or re-thinking the noble? Though volume after volume has been writ-

ten,—though lecture after lecture has been delivered,—though life after life has been devoted—all on the subject of physical training, yet why is there not a proportionate amount of good resulting therefrom?

Trusting that we seem not presumptuous, we shall endeavor to solve the problem. Either the many modes of exercise placed before the public have failed to be pleasurable as well as practical, or such modes have been grossly abused by unwise use, until the majority of the people spurn them from their associations.

Where is the art or the science extant that has not in the past, or may not in the future be abused? Even the Christian religion, the most sacred institution in the great World's Commonwealth, has been greatly, and is now being shamefully abused. Should we condemn the art of Phidias, the science of Schiaparelli, the religion of Christ,—condemn them because they have been abused, or should we not rather as representatives of an unprejudiced mind, do all in our power to exalt the true ideal. And plant our forces with the highest and grandest and most ennobling things born of the human mind and genius? So let it be with physical culture.

Let us define our position at the very outset, by answering the question, "To what aim should physical culture be taught?" The first and foremost object should be health. "Why, I have that!" Then by all means exercise to keep it.

The secondary object should be the symmetrical development of the human body. Whosoever or whatsoever disregards this theory must of consequence suffer at the hands of the general public. Muscular development can not, and by no means ought to, receive the encouragement of a right thinking people. However we find much abnormal development even among trained athletes. This should not be so.

The expert rower should be an expert boxer and thus equalize the consequent

strength of his arm. Mercy! Is boxing manly? Why not if a *man* does it?

Anything a man does is manly,—anything a woman does is womanly, and next to God himself there is nothing in this broad universe grander than a manly man and a womanly woman. But see how boxing has been abused. So have rifle and sabre exercise. Being an expert with the gloves will no more occasion a desire to enter the prize-ring or to pommel everybody, than being an expert with the rifle or sabre would make you go around and shoot or slice up your neighbor. Apropos to this,—“It is glorious to possess a giant’s strength, but is cowardly to use it as a giant.”

Let us exclaim with Dr. Foss, “Let these things be done with the distinct recognition that we have a higher nature and in such a manner and measure as to do no harm to what is best and noblest in this loftier realm. Then will we have what the old Latin poets prayed for, “*Mens sana, corpore sano.*”

Stand before any institution of learning in our broad land and notice the students as they emerge from the halls of their Alma Mater, and you will see those with whom the head seems running away with the body; not that the head is too large, but that the body is too small. We would have a good example of them should we place a large round doughnut upon a hair-pin.

The lean, weak-chested, spindle-shank'd individual, the demands of whose colossal (?) intellect tyrannize over his body,—the sacred temple for the indwelling of whose soul,—he, who quotes so freely, “*Vita sine litteris mors est,*” should unite with that, “*Vita sine mente sana, non vita, tamquam decensus Avernus, est.*”

What man would think of adorning a tumble down hovel with a mansard roof? And yet how many there are who equip a physical wreck with a splendid education. Was there ever such a paradoxical paradox?

The limits of this paper will not permit of a discussion of the different modes of exer-

cise best calculated to aid the health and symmetrically develop the human body. But we would see every school, college and seminary adopt some form of athletic exercise,—physical culture,—bodily training,—gymnastics,—call it anything you like,—adopt it as an obligatory part of the curriculum, and teach it so as to unite profit with pleasure. The teacher should so enthuse his pupils with the work, that it will no longer be reckoned a compulsory exercise, and hated as such, but rather a pleasurable pastime, and loved for the vigor and new life it infuses.

No extensive apparatus is needed, no great amount of time. For the former a pair of one pound dumb-bells for each pupil and a good stretch of country are sufficient, while, as for time, one hour per day of regular, systematic exercise will make you feel like a Hercules.

Now one word in regard to health. There are three flagrant evils preying upon the health of the man of to day,—Sensualism, whisky, and tobacco,—and to some one of these three as an origin, may be traced nearly every disease now running rampant in the human body.

Each of these is a subject upon which volumes have been written. Of the three however, tobacco is the worst, for whereas, it took nearly two thousand years for sensualism and intemperance to imprint their cloven hoofs upon the human race, less than four hundred have sufficed to plant a smoker’s heart in the breast of nearly every human being.

Therefore we would say a word which we hope “will plead like angels, trumpet-tongued, against the deep damnation of” using tobacco.

It should be reason enough for quitting the vile stuff, that it breeds such loathsome diseases, causes such a vile breath and impresses such contemptible habits. Can we find nothing in Holy Writ concerning it? Yes, and he who uses the weed, espec-

ially to excess may take consolation therefrom. "Let him that is filthy be filthy still."

If you are an expert you can tell by the breath the character of the materials passing down the throat of a person. There is a wine breath—a beer breath—an onion breath—a garlic breath—to say nothing of limburger cheese and rum. But the breath of onions and garlic, with limburger cheese and beer "is the ambrosia of the night blooming cereus, or the balm of a thousand flowers, or the spicy odors of Ceylon's isle, when compared with the tobacco user's breath."

Charles Lamb, in his "Farewell to Tobacco" gives us the following:—

Stinking'st of the stinking kind
Filt of th' mouth and fog of th' mind;
Africa that boasts her foyson,
Breeds no such prodigious poison.

American Aborigines.

W. G. MERRITT, DELTA TAU DELTA FRATERNITY.

Scattered over the country are heaps of earth of greater or less size which it is commonly consented, were not formed by any natural process. They are called Indian mounds, being the graves or dwelling places of the Indians or of people who lived before them. They are practically the only source of information of the American aborigines until the time of Columbus. Hence they have been examined and studied closely with a result quite profitable.

These earth-works are unevenly distributed. Some localities abound in mounds and inclosures of various shapes, while in other parts they are a rarity, indicating that the builders found some localities as unfavorable to them as others were favorable. The valley of the Ohio river is particularly rich in these remains; also the Mississippi valley, and the fertile river bottoms of Tennessee.

All of these remains may be classified in one of two classes: (1), mounds, and (2) inclosures. Of these the mounds are the

more numerous. Most of them seem to have been erected as places of burial; but others indicate a place of worship, of habitation, of defense; and still others the use of which no one understands, as the animal mounds of Wisconsin. The inclosures, although less common, are no less interesting. They usually seem to have been built for defense. But had the object been a purely defensive one, it would be supposed that the builders would find one large inclosure easier held and more convenient than several small ones, such as are generally found. That they built these earth-works not in one large inclosure, but in small separated ones, indicates that in so building them they complied with some custom, possibly religious.

The Ohio valley is famous for its works of this nature. Then it is very common to find one or more circular inclosures built in connection with a square or octagonal form, with entrances, and roads protected by similar embankments leading from them. At one time these earth-works were claimed to have been surveyed and almost invariably their dimensions were found to be round numbers of feet, as 230, 340, 620; and the areas inclosed were calculated to be such round figures as 15, 30 and 50. Also that the squares were true squares, the circles true circles, and octagons, true octagons. But they have since been re-surveyed, and these apparent phenomena exploded.

In Tennessee the city of Nashville covers by its site the greater part of an ancient burial ground. Scattered along the Cumberland and other principal river valleys are ancient remains, all more or less remarkable. In general character they are about the same as those of the Ohio and it is probable that that the same people built them.

Some of the mounds of Tennessee are remarkable for their size: Several are over one hundred feet high; others broad and having a flat area at the top of one-fourth an acre. Those of less height are the burial mounds, and when explored reveal in con-

nection with human remains copper and stone implements, copper knives and spears, and stone axes, pipes, and other domestic tools.

It is difficult for those who are acquainted with these works and also with the American Indians, to believe that the Indians ever possessed the civilization indicated by these remains. This is the chief argument used by those who assign their origin to a race of Mound Builders. It is well known that the character of the American Indian has changed during the historic period of the country as much as the country itself.

The coming of white men was not the only cause for this. The early settlers in New England in writing about them said that their most powerful days had passed, for their numbers had been greatly diminished by warring with each other, and the ravages of disease.

The Spaniards who visited the region which now forms the southeastern portion of our country were more fortunate. They found Indian villages surrounded with embankments and stockades, and whose inhabitants possessed comfortable dwellings, woven garments, garlands of feathers, valuable ornaments and skins. De Soto describes these villages as being built around the chieftain's dwelling, which was erected upon a mound twenty to fifty feet in height and flat on top. The whole was surrounded by a square or circular stockade and by a ditch. Later Spanish explorers found that the power of these tribes had decreased, by reason of the European diseases which the Spaniards introduced, and the constant wars in which they engaged among themselves and which to a great extent grew out of the invasions, still further reduced their numbers.

This evidence tends to the conclusion that the race which erected the mounds and earth-works of Tennessee were Indians, and on account of their resemblance to the remains of the Ohio valley, it is thought that

the works there are by the same people. This is not the only evidence. Some of the other indications are seemingly slender, and unimportant, but in connection with other facts, are confirmatory. The pipes found in the mounds of Tennessee are of the same pattern as those used by the Indians known to De Soto. The pattern of pipes prevailing in the better class of mounds of the Ohio region are different from the Tennessee pipes. Yet they are enough alike so that those of Tennessee are recognized as an improvement on those of Ohio. This is true of the Ohio pipes as compared with those found a few hundred miles northwest,—in Illinois and Iowa. The same is true of the ornamentation of pottery.

This is confirmed by a few Indian legends. But on the contrary there are many which disprove it.

There are a number of things which are not satisfactorily explained by this theory: Their knowledge and use of copper; the use of stone boxes for burial, being such a good imitation of the Christian method; and the famous elephant mound of Wisconsin.

SCIENTIFIC.

Natural History Society.

Mr. Chas. Cook, at the meeting of the Natural History Society, September 12, gave a talk on "The Moa and the Roc." He said:

These gigantic birds belong to the order *Struthionese*, or ostrich type of birds. Formerly this family was very numerous, spreading over a large part of the world, while to-day there are but a few scattering species, found only in the Southern Hemisphere, in barren tracts apart from most other forms of life. The following are Dr. Wallace's views concerning the origin and peculiar distribution of this family: "During the early period, when the great southern continents were equally free from the incur-

sions of the destructive felines of the north, the *Struthionese* were probably developed into their existing forms. It is not at all necessary to suppose that the three southern continents were at any time united in order to account for the distribution of these great terrestrial birds. The ancestral *Struthionese* type may, like the *Marsupials*, have once spread over a large portion of the globe. As the higher forms, especially *carnivora*, became developed, it would be exterminated everywhere but in those regions where it was free from their attack. In each of these cases it would be developed into special forms adapted to the surrounding conditions, and the large size, great strength and excessive speed of these birds may have been a comparatively late development, caused by its exposure to attacks which rendered such modifications necessary."

The moa and roc were first introduced to the scientific world about fifty years ago. The roc was an inhabitant of Madagascar, where its existence was first made known when the natives of Madagascar brought two large eggs—which were used as jugs—to a French vessel, off their coast, for the purpose of securing rum. The eggs were at once purchased and sent to Paris. This led to an investigation, and since many bones and fragments of eggs have been found. The first bone discovered was a leg-bone which measured twenty-five inches in length, six inches in circumference at its most restricted portion, while the upper extremity measured eighteen inches in circumference. The two eggs mentioned measured thirty-four inches in circumference and have a capacity of two gallons.

Not many years ago the moa was an inhabitant of the remote hilly regions of New Zealand. Bones of the species have been met with in New Zealand in a great variety of places. From one lagoon about five hundred different individuals were removed. From the remains found it is evident that these birds frequently reached

the height of sixteen feet—much taller but not so thick-set as were the rocs of Madagascar. Up to the present time there have not been less than fifty species of moas unearthed, which vary in height from six to sixteen feet. From a careful study of their remains, the anatomy and an imperfect history has been derived. The natives have a number of proverbs which tend to bring out the character and habits of these birds; thus they have the saying, "As inert as a moa," which indicates that they were stupid, inactive animals. These birds were largely sedentary, and probably went about in pairs as is indicated by the proverb, "Two against two, like the moas."

As the moa was the only large warm-blooded animal found in New Zealand, it was much hunted by the natives for food. The moa was a formidable animal, and very dangerous to approach; accordingly, before setting out on a moa hunt, the natives would invoke the assistance of the Great Spirit, to whom they attributed the power of sending good or evil in the chase. After their devotional exercises were completed, if all was favorable, the hunt was started; but should a cricket chirp in the grass on the left side of the assembly, or any other evil omen make itself manifest, the hunt was immediately postponed. In hunting the moa the natives took advantage of the bird's custom of running in certain paths. A large part of the hunting force would secrete themselves in the bushes along one of these runways, while the remainder of the party were to drive the birds from their hiding places. If a moa chanced to come along one of the guarded paths, the men hidden would thrust spears into the bird's sides as it passed. By the time it had reached the end of the line of warriors it would have become so weak that it could be faced by the bravest men and dispatched.

What an interesting sight it must have been on the eve of a successful hunt to see the crowd of dusky forms gathered around

their camp-fire, their faces fairly glowing over the thought of a bountiful repast in the form of huge eggs now roasting in great stone ovens, and large masses of meat kept simmering by means of heated stones placed in their immediate vicinity.

From what has been observed it is evident that the extermination of the giant bird of New Zealand could not have taken place at a very remote period. It is said on good authority that an old Maori, in 1844, stated that while a boy he had seen living moas, which statement, if true, would bring the extermination of the moa within a hundred years of the present time. Prof. Owen, in 1882, stated that a still existing specimen in South New Zealand is not altogether improbable. The natives maintain that the giant birds of New Zealand are still to be met with in some of the most remote and obscure sections of the south island, and from time to time exciting accounts of some traveler's encounter with one of these birds reaches us through the press. While these reports are doubtless false, yet the fact that these giant birds of Madagascar and New Zealand were probably living a hundred years ago, and that they were closely related and exterminated by man at about the same time, is a point of great interest to the student of natural history.

Mr. Wheeler gave an interesting account of visiting, on his recent trip to the northern part of the State, a botanical camp situated on Black Lake. Here were camped two young men from Ohio who were making botanical collections, also collections of birds and fossils. He spoke in regard to the pleasant and profitable work they were doing, and suggested that such a camp might be a profitable way for some of our young scientists to spend their short vacations.

OBSERVATIONS.

Mr. Toumey called attention to the larvæ that were working on the wild rice growing in the ponds in the botanical garden. In

color and size they resemble very much the grain which they feed upon, apparently a case of mimicry.

Mr. Wheeler: While at Park Lake a short time since, Dr. Beal and myself found seven species of flowering plants not previously known in this vicinity.

Mr. Wheeler also called attention to an artesian well, located at Hubbardston, Michigan. This well was open in August, 1890. The first fifteen feet were ordinary gravel, then forty-one feet of heavy blue clay, following this forty-five feet of layers of clay and sand intermixed, then follow twenty-five feet of very sharp, clear sand, one hundred and fifteen feet of blue or fire clay, and then thirteen feet of gravel. The water rose thirteen feet above surface of ground. At a depth of eighty feet the drill passed through a mass of spruce wood, fragments of this being brought to the surface and examined.

Dr. Beal spoke of the manner in which the farm department made their exhibit of corn at the State Fair, showing the superiority of exhibiting entire plants set in trenches so that the observer might see the stalks as well as all other parts of the plants.

The Doctor also said: During the past week I have been assisting in the judging of grains at the State Fair. The wheats were examined by reaching well down into the sack to get a fair sample, and putting it upon white paper; by preparing a sample from another sack in a similar manner, the two can be compared, the best retained to compare with the next sack, and so on.

The clover seed was examined in a similar manner. It was easily seen whether clear from chaff and dirt, but from each sack a fair specimen was examined under the microscope. The last two on the paper I was unable to determine which was the best. I afterwards learned that the two specimens were exhibited by the same man, and probably from the same lot of seed.

In examining the grass seed, which is generally exhibited in the chaff, I came

across a sack of fine seed, perfectly free from chaff. Reaching well down into the sack I found the premium card of a year ago. The exhibitor had purchased the seed and was keeping it for an annual exhibit at the various fairs.

Mechanical Club.

At the regular meeting of the Mechanical Club, September 5th, Mr. W. P. Hawley gave an interesting paper on Aërial Navigation. He said: The first attempt at aërial navigation was made in a hot air balloon, in 1773, by the Montgolfier brothers at Annonay. The balloon rose to a height of 2,200 yards, and descended without accident. In 1804 Gay-Lussac attained the height of 2,300 feet in a balloon inflated with gas; at this height the barometer stood at $12\frac{1}{2}$ inches, and the thermometer which was +31 degrees C. on the ground stood at -9 degrees.

The most remarkable balloon ascension was that made by Glaisher and Coxwell. The balloon which they used was inflated with 9,000 cu. ft. of coal gas and carried a load of 600 lbs. The ascent took place at one P. M. and in 52 minutes they had attained the height of 29,000 ft. with the thermometer at -16 degrees C. At this point Glaisher fainted. It is estimated that they reached the altitude of 37,000 ft. with the barometer at 7 in. These ascensions are remarkable but of little practical value.

In order to make balloon ascensions entirely successful we must have balloons that can be steered, raised and lowered at will. Such a balloon was built by a Mr. Campbell at a cost of \$3,000, and worked quite well on trial, but afterwards would not stand the test and finally drifted off with its occupant and was never heard of again.

There is another branch of aërial navigation, that is, by means of flying machines. This branch is, however, in a very imperfect state of development. It is thought by some that flying, in time, may become a success by the aid of the light metal, aluminium.

Mr. Waldron read the following paper on "The Fuel of the Future."

It has long been said that after the supply of coal and wood is exhausted, perhaps man can be warmed by some application of electricity, but as the production of electricity requires power, and power requires fuel something must be found to take the place of coal and wood. You may say that this is to be found in natural gas, but this too may be exhausted in time.

It has been said that the supply of coal is unlimited, but scientists affirm that this is not so. They say that the supply of anthracite may last a few decades, and the bituminous only a few hundred years more. Many theories are formed as to the source of natural gas. It is so closely related to petroleum that it is difficult to say which comes from the other. We may, however, safely say that they both come from the same mineral. Many think this mineral to be coal. If so when the coal is exhausted the gas will go with it.

In Europe, as in America, the gas regions are in the neighborhood of oil areas. This would seem to indicate that the gas is a production from the oil. It seems to me that after coal and wood are no longer available for fuel we must look to some form of electricity.

W. A. Ingalls, A. M., has lately been elected president of Baker University, located at Baldwin, Kansas. He is not thirty years of age, and has been a college graduate only five years. He is doubtless the youngest college president in the United States. The press speaks very highly of his merits.

The youngest college professor in the country, invested with a full professorship, is Arthur F. Abernathy, professor of modern languages and adjunct professor of ancient languages in Rutherford College, N. C. He is not yet eighteen years of age.—Ex.

A partial list of colleges in the United States which opened in 1857 are as follows: Michigan Agricultural College, Lansing, Mich.; Bowdon College, Bowdon, Ga.; Alford University, Alford Center, N. Y.; Cornell College, Mt. Vernon, Iowa; Upper Iowa University, Fayette, Iowa; Monmouth College, Monmouth, Ill.; University of Minnesota, Minneapolis, Minn.; Oskaloosa College, Oskaloosa, Iowa.

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.

ECLECTIC SOCIETY.	
K. L. BUTTERFIELD,	Editor-in-Chief, Literary Articles and Editorials.
NATURAL HISTORY SOCIETY.	
J. W. TOUMEY,	Science.
PHI DELTA THETA FRATERNITY.	
V. H. LOWE,	College News.
DELTA TAU DELTA FRATERNITY.	
J. L. POTTER,	Athletics.
OLYMPIC SOCIETY.	
H. W. MUMFORD,	Colleges and Exchanges.
UNION LITERARY SOCIETY.	
A. R. LOCKE,	Personals.
—	
W. A. FOX,	Business Manager.
J. E. HINKSON,	Asst. Business Manager.
SEC. H. G. REYNOLDS,	Treasurer.

AGRICULTURAL COLLEGE, OCT. 10, 1890.

WE were much surprised to find that the new class had entered about two-thirds of its members in the Mechanical course, which was reversing the usual proportion. Time enough has elapsed to partly allow the causes of this fact to become manifest. And we think we see one reason for it is, though from what source it sprang is doubtful, that some made a mistake in choosing. Already a number have expressed their intention of changing to the Agricultural course. Now it ought to be well understood by all who may advise would-be students that no one can very profitably take the Mechanical course for what is termed a general education, nor unless he wishes to make a life work of mechanical, mathematical or engineering lines. Such information may be of benefit to many who do not thoroughly understand the methods and aims of the two courses.

THE recent calls for some of our alumni to take important positions in other colleges and experiment stations are most gratifying. It proves that our college is still in the van of its class of institutions; that our methods of instruction and our instructors accomplish what it is intended they should.

The farmers of the country are rousing and in the coming years are destined to prove an element of greater power than ever before. The two factors dominant in bringing this about will be political influence and better education. The farmers' colleges are not only sending out good men onto farms, but they are teaching thousands of farmers the advantages of brain work. For the benefit to be derived from colleges of this kind is not alone in making good farmers of a few men, but in making better men of all farmers. We are proud that our college is sending forth men who are to help in the progress of the agricultural classes.

WHAT element is it in human nature that often impels a person to shirk those very duties, the performance of which would be of acknowledged benefit? How often do we hear a college student rejoicing because he got a good mark for a recitation, when the point he recited was the only one in the lesson he knew! How many men make up studies just to get through the course, when their true judgment must be that not the studies passed but rather the discipline of study is the measure of benefit a student receives. There are those who seem to think it smacks somewhat of heroism to go to a class unprepared. More seem to prepare their lessons as a duty instead of being desirous of learning. The fact is quite universal. Where is the defect? Is it any fault in our present system of early education, that it may drive more than it leads? Is it heredity, which brings with it the faults of a former system? Or is it indolence natural to the genus *Homo*?

No doubt manhood is getting the better of boyishness in our educational institutions, and we hear less and less of rough conduct. There is a certain abandon, at times, about college life and constant association with genial fellows that tempts men who have the average amount of animal spirits; hence "scraps," "rushes," and so on. If one enjoys it, there is no more harm to manhood in a "scrap" than in a game of foot-ball, and usually much less danger of injury. And in spite of the frowns of a critical world, some college men will persist in such things. The difficulty is that a few fellows go too far, and so cast reflections upon all concerned. If one class think they can take another class from a space of three dimensions to one of "four dimensions," let them try it. But this incessant "ducking" and "stacking" and pestering that a few unfortunate freshmen have to endure is unmanly and disgusting.

It is quite evident that the Student's Organization, as a governing body in the college, is of but little efficiency. While the order of the halls has in no wise improved the work done by ward officers has fallen well nigh to zero. All recent cases of discipline have been dealt with by the Faculty alone, who have good reason for their prompt action in the neglect of the students to try cases. The sentiment that apparently prevades the laws of the Students' Government is not present in the college to-day, or perhaps rather is not a power. The students must govern themselves or be governed. If the latter, there is no doubt but that military discipline will be extended to the government of the institution. It has been hinted at for a number of years and there are those in authority who favor its adoption now. If no other means are at hand, if the Faculty feel that the college needs more rigorous discipline, it may be best to introduce it. But we think it unfortunate that necessity can require it. For it will show that our present system of self-government is a failure. Then the idea of military discipline we

think antagonist'ic to the spirit of instruction at the college and of manhood in the students. To be of service the discipline must be both strict and absolute. It is a trait of young human nature to devise methods for breaking commands. We fear a system of espionage would be developed that would tend to form an aristocracy of upper class men, and that would do much to mar the good fellowship now existing among our students. Undoubtedly many restraints would be effectual and a machine-like order would probably prevail. But we feel confident that the independence of thought and manliness of action so characteristic of our alumni would in time give way to this machine-like character in the graduates.

The sentiment of order and gentlemanly conduct is strong enough to restrain any who are careless or foolish. It must be exerted from now on if we wish to maintain the democratic features of our government at the college. Let each student use his own common sense and let each have a decent regard for others. Then all will go well.

COLLEGE NEWS.

O. L. Hershiser visited the college recently.

The State Board met at the College Tuesday, October 7.

An unusually large number visited the Library during the past month.

Steam pipes have recently been placed in the physical class-room.

Mrs. Clute, accompanied by her brother and nephew, attended the Chicago exposition.

The Y. M. C. A. send ten delegates to the State convention held at Flint, October 9-12.

Quite extensive repairs have recently been made on the heating apparatus in the greenhouse.

Mr. Van Buren, U. S. marshal for the eastern district of Michigan, visited the College recently.

It is rumored that some more of our sub-faculty will be picked up by other colleges before long.

Secretary and Mrs. Reynolds gave a reception to the Delts Saturday evening, September 20.

Mr. Chas. Merrylees of Aberdeen, Scotland, a brother of Mrs. Clute, is visiting the College.

President and Mrs. Clute entertained Mr. Sanderson, the artist, and others, at a tea-party Friday evening, October 3.

At a recent meeting of the State Board of Agriculture it was decided to hold twenty institutes the coming winter.

Lieut. Simpson is out again, and, although not fully recovered from his recent sickness, is able to attend to college duties.

A new Slate sensitive drill press and an automatic tool-grinding machine are recent additions to the iron shop equipment.

Dr. Beal will spend the winter at Harvard, where he expects to complete the second volume of his valuable work on grasses.

Mrs. Wood, Mrs. Simpson's mother, visited the college recently. She was accompanied by her daughter, Miss Wood.

The Y. M. C. A. held a reception in their rooms Friday evening, October 3. After the program a social hour was enjoyed.

J. D. Tower, '85, is taking a post-graduate course in agriculture, entomology, botany and German. He will remain here this winter.

The heads of the various departments are busy writing their reports to appear in the Secretary's report for the past year.

President Clute has received the detail of Lieut. John J. Crittenden, 22d Infantry, U. S. Army, which takes effect December 15, 1890.

Mr. G. H. Hicks of Owosso, formerly a student of Albion College, is taking a special course in botany, under the direction of Dr. Beal.

Rev. C. H. Beale of Lansing will deliver his interesting lecture on "A Trip Through Europe," in the chapel, Friday evening, October 17.

Thirty-one thousand dollars of the money appropriated through the passage of the Morrill bill, is now due the College, and will be paid soon.

President Stockbridge of the North Dakota Agricultural College, addressed the students in chapel recently. He was a guest of Prof. Taft while here.

During the past few weeks President Clute has addressed the farmers at the following places: Lake Odessa, Grand Ledge, Eaton Rapids and Corunna.

Among the other attractions at the greenhouse is a large bed of carnation pinks, containing about two hundred and fifteen plants, also a lemon tree bearing two ripe lemons and six or seven green ones.

L. H. Dewey, B. S., assistant in botany, was recently appointed to a responsible post under Dr. Vassy, botanist of the department of agriculture at Washington. Mr. Dewey is an enthusiast in his work, and his loss is felt by the department.

Recent additions to the museum are a fine moccasin from Florida and a copperhead from Ohio. Prof. Cook says that even the snakes in the south seem to dislike color, for the southern copperhead is of a lighter shade than the same species from Ohio.

About twenty students have recently organized a botanical club, with Mr. Hicks as president and R. S. Campbell secretary. They propose to do some good work in botany, and meet every Friday evening, the second meeting of the month being with the Natural History Society.

The annual oratorical contest will be held in the chapel Friday evening, October 31. The following are the names of the orators: Union Literary Society, A. R. Locke; Eclectic, K. L. Butterfield; Olympic, W. A. Fox; Hesperian, S. C. Dundore. The percentage system will be used to obtain the results.

The program for Sunday afternoon services for the remainder of the term is as follows: October 12, Rev. McGrath; subject, "The spirit of unity." October 19, Rev. C. H. Beale; "The inner life." October 26, Rev. Mr. Sly; "The sword of the spirit." November 2, Rev. H. S. Jordan; "Paul's last words to Timothy." November 9, Rev. Mr. Temple; subject, "Christianity applied to the sturdy qualities of character."

The experiment steers of the Short Horn, Hereford, Galloway, Holstein and Devon breeds, which have been fed at the College for the past twenty months, were recently slaughtered at Detroit by the Michigan Beef and Provision Company. They were pronounced by Detroit breeders as excellent beef, and dressed from 63 per cent. to 67½ per cent. of live weight, the two Herefords making the two extremes in the dressing, with an average about 66 per cent of live weight.

The college battalion has been reorganized into three companies, with material enough to form two more. The following is the roster of cadet officers: V. S. Hillyer, adjutant; C. A. Udell, quartermaster; L. W. Watkins, sergeant-major. Company A, H. B. Fuller, captain; G. C. Munroe, first lieutenant; M. E. Greeson, second lieutenant; R. C. Hardy, first sergeant; A. R. Locke, C. P. Locke, Wm Enders and C. A. Hathaway, sergeants. Company B, K. L. Butterfield, captain; V. H. Lowe, first lieutenant; A. F. Gordon, second lieutenant; B. W. Peet, first sergeant; C. H. Weideman, W. S. Howland, E. M. Devendorf and R. D. Gardner, sergeants. Company C, F. W. Ashton, captain; J. L. Potter, first lieutenant; A. C. Sly, second lieutenant; L. C. Gibbs, first sergeant; — Grossbeck, J. A. Shotwell, F. Bauerle and W. E. Palmer, sergeants.

We are indebted to Mr. E. A. Burnett, of the farm department, for the following remarks: "The question is raised as to what position the college farm should hold as a breeding establishment in competition with the breeders of the State. For notwithstanding the fact that breeders are always anxious to sell stock to

come to the college, they are less willing that stock should be sold from here in competition with private capital. To some extent there is reason for the criticism. The necessities of the college require that it shall keep specimens of many breeds for illustration and often these may be most valuable if kept in breeding condition and producing pure bred stock. We hold that no breeder, however successful, can afford to sell indiscriminately everything that he breeds and it is the duty of institutions like this to set the example among breeders of weeding out all poor stock whether purely bred or otherwise. If a good pure bred animal is better than a native through hereditary tendencies, then a bad, pure bred animal is worse for the same reason. It is the idea of the college that in the future none but animals of high merit shall be sold for breeding purposes; and when the breeders of pure bred stock generally begin to follow this example we shall see brighter faces among the breeders, and brighter faces and broader backs among beef cattle."

Dr. Beal's annual report of the experiment stations in the northern part of the State, and of the one situated at the college, will appear soon. Of the plants tested on the old, often-cropped and much worn land, the following produced the best results: *Agropyrum tenerum*, a wild grass having tops much like that of quack grass; *Agnostis alba*, red-top; *Andropogon provincialis*, turkey-foot finger-grass, a tall grass flowering late; *Andropogon scoparius*, a smaller wild grass than the former; *Broomis ciliatus*, a kind of wild chess; *Dactylus glomerata*, orchard grass; *Elymus canadensis*, a wild rye grass of coarse texture, and a native of our dry lands; *Elymus Virginicus*, another wild grass, somewhat like the preceding, but found on low land. *Panicum sanguinata*, finger or orb grass, a common weed found in gardens and fields, though making very good feed; *Poa compressa*, flat stemmed poa or blue grass. Dr. Beal thinks it almost useless to look to forage plants alone to accomplish this task, and has decided to fertilize the soil next year and sow a mixture of the most promising clovers and grasses, allowing them to seed, thus filling up the vacant spaces between the plants and enriching the soil by the fertilizing substances from the dead leaves and stems. Of the other northern stations, Baldwin, Walton, Harrison and Oscoda, the land at Oscoda is the poorest, while that at Harrison is the best. The experiments with grasses at the College have been conducted on the delt, a plot of five and a half acres just north of the College grounds, in which were left four plots of old sod which had been pastured for twenty years, and which was found to be well seeded to June grass, timothy and red top in nearly equal proportions. Around these plots were sown sixteen prominent grasses and clovers, and one or two mixtures of these. Each year these plots are mowed with a view to testing the relative merits of newly seeded land and that which has been seeded long enough to be called permanent pasture. This last experiment will not be completed before next year.

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.

WITH '63.

F. R. Chase of Smyrna, Michigan, is one of Ionia county's most successful farmers. He not only is an enthusiastic farmer, stock raiser, and wool grower, but he is interested in various other industries, banking, manufacturing and lumbering.

WITH '65.

Watts S. Humphrey is a republican nominee for congress from the ninth district.

'70.

Hon. C. W. Garfield is the secretary and most active member in the company that is constructing the new railroad from Grand Rapids to South Haven.

'73.

In the September *Forum* we find an interesting article on "Protection Against Tornadoes," written by John P. Finley.

'74.

H. A. Haigh, lawyer, of Detroit, has been seriously ill with typhoid fever.

'75.

A. A. Crane runs the only bank in Gaylord, Mich., but that is not all. He has a real estate office, is recorder of deeds and mortgages, has an interest in the Michigan Central railroad, and, in fact, is interested in all the energetic movements of the day.

'76.

R. A. Clark, recently of Lansing, has removed to Saginaw, where he will engage in business.

Not long ago we made note of the possibility that John E. Taylor would be a candidate for the State Senate. At a recent republican convention, held at Big Rapids, Mr. Taylor secured the nomination, and now, if there are any merits in the g. o. p., he will be the next Senator from the twenty-third district.

'77.

A *personal!* Well, yes! It's a girl, you know, and A. B. Peebles of the Chemical department is the man who wears the fatherly smile.

'78.

Yes, it was E. O. Ladd of Old Mission who sent those pears, and if "ye board of editors" are competent judges of fruit, they were of excellent quality. Mr. Ladd informs us that he harvested thirty-five barrels of Bartletts from twenty-four trees. But exaltation over the success of his pear orchard does not lessen his interest in politics. He was another one of the "old boys" who served as delegates to the State republican convention at Detroit.

F. E. Robson has located in Detroit, and associated himself, for the practice of law, with Judge Van Zile. The firm will be known as that of Robson & Van Zile.

Geo. E. Breck, who with his wife left for Europe last summer, is now returned. He brings with him a fine lot of Cleveland Bays, and some valuable Shropshire sheep.

'79.

The wife of C. W. Gammon of Courtland, California, is visiting friends in Michigan.

Chas. E. Sumner is a successful lawyer at Toledo, O. He has two little girls, aged twenty-three and eight months respectively.

'81.

Chas. McKenny, instructor in English Literature at Olivet College, will recreate this winter by preaching Sundays at Dimondale.

W. S. Delano, F. E. Delano of '82, and Milton Delano of '84, known in Lee Park as the Delano brothers, are dealers in garden and field seeds. They have a tract of land of 480 acres. They are energetic, live men, and are successful in their business. W. S. Delano is one of the directors of his county Agricultural Society, and was, in August, appointed by the State Governor a delegate to the farmers' congress held at Council Bluffs, Iowa. Being capable young men, the brothers promise to become prominent in business and political affairs in the not distant future.

'82.

W. L. Snyder, chemist in the Michigan Carbon Works, has been re-engaged in the Detroit night school.

L. B. Hall, having for three years successfully superintended the Belding public schools, again began his duties with the beginning of the school year. Mr. Hall's congeniality in the class-room and ability to instruct has won for him popularity among both students and patrons.

WITH '82.

The wife of Richard Haigh recently visited at the college.

'83.

H. W. Collingwood has sold his experiment farm in New Jersey, that he may devote his entire attention to the interests of the *Rural New Yorker*, of which he is editor.

L. A. Buell, having left old Michigan in 1885 to seek his fortune in the West, located at Minneapolis, Kan. For one and one-half years he labored in the employ of Shelton and Smith, Shelton, of '82, being the manager. In 1887 Mr. Buell engaged in the real estate business, and has now a complete set of abstracts of title of Ottawa Co., and also carries on a general loan and insurance business. During the present summer he was in the employ of the Interior Department, abstracting and recording the indebtedness of Ottawa and Saline counties of Ia. He is also interested in farming, having a half interest in a 320 acre farm. Again he has made grand success in domestic affairs, for in '78 he came back to Michigan and claimed for his bride no other than the sister of his lamented classmate, A. A. Bamber. He enthusias-

tically says that with him marriage is anything but a failure. His letter head reads, "L. A. Buell & Co.," but he informs us that his wife is the best and only partner he ever had.

D. C. Holliday, Jr. died at the Auditorium Hotel, Chicago, Sept. 15, '90. Daniel was one of the leaders in his class, and the fountain standing near the greenhouse is one of the monuments to his memory.

'84.

J. J. Bush, a Lansing alderman, has given notice that he will introduce a rule prohibiting the improper pruning and planting of the city shade trees. It takes an M. A. C. graduate to tell when trees are properly trimmed.

J. R. Abbot, of East Saginaw, visited the college recently.

O. L. Hershiser presented at the late State Fair collections from his apiary, which attracted the attention of all persons interested in apiculture. Aside from his labors in connection with his apiary he is engaged as clerk in the office of the general attorney of the N. Y. Central Railroad. Orel paid his Alma Mater a visit during the State Fair.

J. D. Hill, a hustling lawyer of Montpelier, O., says to the "SPEC.": "Keep your good work going, and give us all the personals and college news possible, for therein lies the value of the "SPEC." to the alumni. As for myself, I am flourishing even like unto the well known 'bay tree,' and am still a 'bach', possibly a confirmed one, but while there is life there is hope."

'85.

G. C. Lawrence is principal of the Williamston high schools. Madam Rumor says that "Grandpa" is soon to be married.

Chas. B. Collingwood and wife, who is the sister of H. E. Thomas, of '85, are visiting at the college. Mr. Collingwood leaves the Experiment Station at the Industrial College at Arkansas, and will soon commence his work as chemist in the Arizona Agricultural College. In a short address to the students during the morning chapel, he spoke of the dearness to him of "old M. A. C." He prizes the honor of being one of her graduates, and took pride in saying for her that she had no equal in existence. His intimacy with other colleges has taught him to appreciate the advantages offered by our college. A republican when he went to Arkansas he is yet true to his party, but he sympathizes with the intelligent voters of the South and the pitiable condition they are in, being, as he says, somewhat bound down by the less intelligent vote of the negro.

H. M. Wells, of Rochester, Mich., and Miss Ada Hartwell, married, Sept. 3, '90. M. A. C.'s hearty shake, Hubert. Mr. Wells is engaged in raising garden products, small fruits, and poultry. For recreation he will teach a nine month school this next winter.

'86.

Geo. S. French, apiarist and gardener, Lansing, Mich., took unto himself a wife last week. Again we shake, George.

J. E. Hammond is principal of schools at North Adams, Hillsdale county.

The Clemons brothers, J. W. and W. H., are engaged in selling farm implements of all kinds and descriptions at Durand, Michigan. W. H. has been elected surveyor of Clinton county.

'87.

F. R. Smith, formerly at Somerset, Mich., was an assistant to the Treasurer of the State Agr'l Society during the State Fair. He afterwards visited the college.

J. C. Duffey is now in charge of entomology and horticulture in Shaw's Gardens, St. Louis, Mo. During this last summer he made a very important discovery of an heretofore unknown enemy preying upon the red spider.

'88.

Geo. L. Teller has recently left us, having accepted a situation of Professor of Chemistry in the Arkansas Agricultural College. He receives a salary of \$1,300. What is M. A. C.'s loss is Arkansas' gain.

R. H. Cary, of Lansing, is establishing a reputation as a great vocalist. His voice may be heard from the choir of the Methodist church.

To Mr. and Mrs. F. H. Hillman, of Reno, Nevada, a Willits A. Hillman, who arrived Sept. 6th, 1890.

'89.

H. E. Weed took his departure from M. A. C. last month to commence his new duties in the entomological and horticultural departments at the Agricultural College of Mississippi. He receives a good salary, and reports favorably of his work.

Alex. Moore plead his first case as a lawyer, at Port Huron, last month.

Wm. Rossman is again at the college working in the chemical department of experiment station.

E. A. Holden has been chosen county secretary of Benzie Co. He was a republican delegate to the representative and congressional conventions at Marquette. From the reports that are abroad one would surmise that Elsworth has been doing a little political scheming, as it were.

J. W. Toumey has collected quite a herbarium for the college during this season. The study of systematic botany will be his work for the coming winter.

R. S. Baker reports a busy and active life. As a result of his missionary work for "dear old M. A. C.," he expects to be able to send next fall several students to our halls.

'90.

H. F. Hall writes that he is nicely located at 1,127 12th Ave., Altoona, Pa., one of the pleasantest places in the town, where he is likely to stay for at least four years. Barney has formed the habit of retiring early at night. In fact, he thinks his retreat a good place to straighten a man out after college. Not having met a lady since his arrival, he asks the "boys" to write in order to relieve the monotony of life among total strangers.

E. J. Rowley, having been rusticated on the farm near Greenville since commencement, returns to the college to do some special work preparatory for civil service examination.

WITH '90.

H. F. Johnson, city engineer of Ludington, has been busily at work during the whole season. The street paving, grading and sewerage planned and overseen by him is of lasting benefit to the city. He anticipates spending four or five months at Ann Arbor this winter.

V. V. Newell has an excellent reputation as a school teacher, and will remain as principal of public schools at Custer, Michigan, for the next year.

WITH '91.

C. M. Wheeler has taken up a few studies aside from his work in the botanical department, and will graduate with '91.

Fred. Stone is clerking in a dry goods store at Harrison, Mich. He is well liked and is doing well.

WITH '92.

U. P. Hedrick is spending his one year's vacation at farming, preparatory to finishing his course with '93.

WITH '93.

C. O. Nilson, *alias* Olson, has left M. A. C. to take a classical course in the Swedish institution at Rock Island, Illinois.

EXCHANGES.

Quite often we notice among our exchanges that a bitterness arises between two college journals which not infrequently results in stirring up hard feelings between the colleges represented; this feeling in a majority of cases originates in the Exchange columns: While all of us admit that this is not the right thing to appear in our journals, yet we feel justified in retaliating at times. It is not a desirable thing to be spoken unfavorably of by another journal, even though we know the journal's standing is inferior to our own, yet such things will occur and the question that comes with great force to every exchange is, "How to prevent unpleasant feeling and contention arising from criticism." The fact that many of our exchange columns are free from helpful suggestions is one which should be noted by all; as we have mentioned above, it is not a pleasant task, but if we are to receive all the benefit possible from our exchange department we must not drop this feature. We receive encouragement by favorable criticism, but the real lasting benefit comes from suggestions from other journals as to how we may improve our own. All of us ask suggestions, but the trouble has been we were doing it simply as a matter of form, and not earnestly. College journal criticism should be given in a kindly and helpful

spirit, and should be received as such by the parties interested; no other criticisms should be allowed to enter our papers. The "SPECULUM" has been at fault and does not wish to be excluded from the great fraternity of college journalists who have been led into this, as it seems to us, serious mistake. We will take this opportunity and say that whatever suggestions appear in the "SPECULUM" hereafter will be given in the spirit of honesty and helpfulness and we trust they will not offend.

The management of the Illini, a semi-monthly, published by the students of the University of Illinois, have made a few changes in the arrangement of their paper, which seem to add to the business like appearance, and at the same time to the convenience of their well edited magazine.

We clip the following from the I. A. C. Student, an eight page sheet published by the students of the Iowa Agricultural College; such reports of our college and its interests encourage our students to better work:

The "SPECULUM" of the Agricultural College of Michigan has the honor of being our first exchange. It is a creditable paper in every respect. Its editorial and local columns are well edited. The M. A. C. is similar to the I. A. C. in most respects and sustains quite an intimate relation with us through her graduates. Dr. C. E. Bessey graduated at M. A. C. in '69; Dr. B. D. Halsted in '71; Professor A. A. Crozier in '79; Professor C. P. Gillette in '84, while our honored Dr. Welch was also a Michigan man.

We have been much interested in the first four members of this paper and we have been pleased with the enterprise exhibited; the paper is certainly one of which the students need not be ashamed, as it is no easy task to maintain a college paper the first few years of its existence. We hope soon to see it appear in pamphlet form with a neat cover, which would add greatly to its appearance. We have also found it advisable to publish a journal once a month.

The problem has at last been solved: Why is there so much learning to be had in college?

Because the Freshmen bring it in, and the Seniors don't take it out.—Ex.

IN OUR Manufacturing

Department
We employ the
Largest force of
Skilled Designers and
Jewelers in the State, and
Have unequaled facilities for
Producing Artistic Jewelry and
Society Badges of Every Description.

Wright, Kay & Co.,

IMPORTERS & JEWELERS.

140 Woodward Ave., - - - DETROIT.

LUNCH COUNTER. THE GEM.

The Best Lunches and Warm
Meals at all hours.

Deference shown to M. A. C. boys.

G. M. HASTY,

117 Washington Ave. S.

MUSIC.

Latest Music, Guitars, Banjos, Violins, Organs, Pianos, in fact, everything in the line of

MUSICAL INSTRUMENTS,

At rock bottom prices. Students' patronage respectfully solicited.

SANBORN & CO., 233 Washington Ave. S.

FOR THE FINEST

Photographic & Work

—GO TO—

CASSEY & RILEY,

OVER LANSING NATIONAL BANK.

SPECIAL RATES TO STUDENTS.

OUT-DOOR GROUPS MADE ON SHORT NOTICE.

J. R. POTTER,

AGRICULTURAL COLLEGE

BARBER SHOP,

Room 28, Williams Hall.

BROAS

The One-Price Clothier, undersells them all on Clothing, Hats, Caps, and Gents' Furnishing Goods.

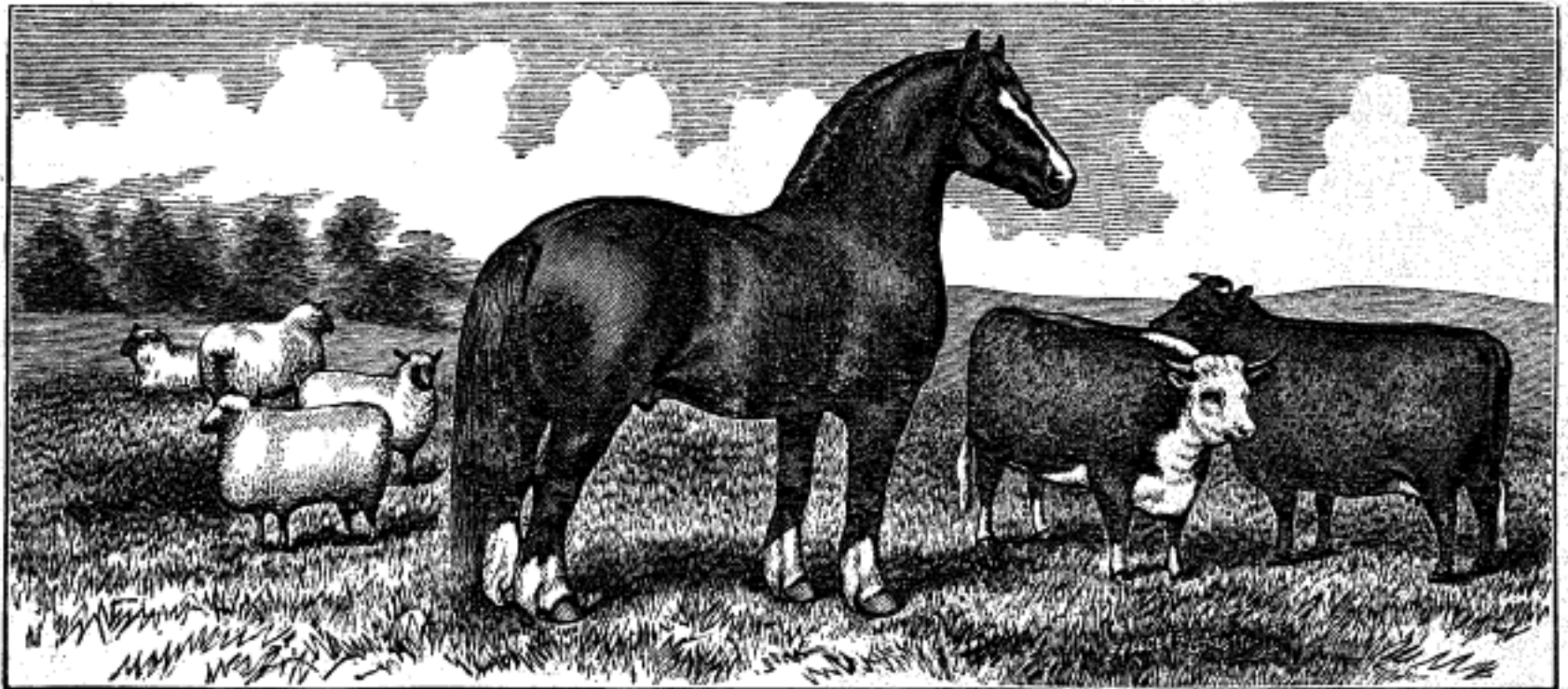
CORNER WASHINGTON and MICHIGAN AVENUES, LANSING.

Springdale Farm, Lansing, Mich.,

JAMES M. TURNER, Proprietor.

Clydesdale Horses. Standard Bred Trotting Horses. Shetland Ponies.

Shorthorn and Hereford Cattle. Shropshire Sheep.



Special Sale of Registered Shropshires for next Three Months.

Best Goos ! Prices the Lowest !

J. A. TURNER,

(Successor to A. Turner),

GROCERIES.

119 Michigan Avenue, Lansing.

M. D. LUCE,
DRUGS,
PERFUMES AND CIGARS.

Opposite National Bank,
Lansing, Michigan.

“All that Glisters is not Gold.”

We do not boast of a fine brick building and elegant parlors. Our Gallery is neat and commodious, and no better light in Central Michigan. After an experience of thirty-four years, and always doing my own operating, I claim the right to say that I can, I will, and I do make the **FINEST** photographs in the city of Lansing. Try me and see. It will cost you nothing if I fail. Special rates to all connected with M. A. C.

CHENEY.
201 Washington Ave. S.

Students, Buy your Writing desks, Book-cases, Chairs, Tables, Cots, Mattresses, etc., of

COWLES BROS.,
FURNITURE DEALERS.

Lowest prices in the city,

235 Washington Ave. S.

LANSING, MICH.

THE DEEP CUT

Carries a complete line of **LADIES' and GENTS' BOOTS and SHOES and FURNISHING GOODS.** We are sole agents for the **HOOPER and GOVE HAT.** Also have in stock a fine line of Military Gloves, and we specially court the college trade.

I. D. BRACKETT, Prop.
312 Washington Ave. South.

T. H. SEDINA,
THE MERCHANT TAILOR,

Is so busy removing to the new and elegant store built for him by Mr. P. L. Daniels that he has not time to tell the boys of the M. A. C. about his new goods. But he will be able to take care of all who are in need of Suitings, or any thing in his line.

GIVE HIM A CALL.

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.

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.



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.

W. A. JOHNSON, Proprietor and Manager of the Michigan School Bureau.

WEBBER & BUCK.

WE CARRY ALL THE

Latest Novelties in Furnishings.

We are Sole Agents for the Celebrated DUNLAP HAT.

Special Attention Paid to College Trade. Call and See Us.

224 WASHINGTON AVE. SOUTH.

P. S.—Have just received a full line of Gordon and Stanley Sashes, and Gents' Fine Black Cassimere Underwear.

NOTHING SUCCEEDS LIKE SUCCESS!

JAMES H. WOOD'S

FIVE CHAIR BARBER SHOP

Is Headquarters for College Students.

103 MICHIGAN AVENUE EAST, LANSING.

FRED W. BERTCH,

Wholesale and retail dealer in Fresh and Salt

MEATS

POULTRY, GAME IN SEASON.

No. 333 Washington Ave. South.

Telephonic Communication.

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.

• LION •  PHARMACY.

WM. F. HENSEN.
FINE DRUGS,
Medicines and Pure Chemicals,
FANCY AND TOILET ARTICLES,
PERFUMES,

Largest stock of Imported and Key West
Cigars, Cigarettes and Fine Tobaccos.

Next to Postoffice. LANSING, MICH.

VOISELLE & LAROSE,

STUDENTS' HEADQUARTERS FOR

Wall Paper and Decorations.

All styles at Rock Bottom Prices.

R. B. SHANK & CO.,

THE LEADING

GROCCERS

OF LANSING,

200 Washington Avenue South.

Don't forget that

POTTER, SWEENEY & FULLER
Are doing the Laundry Business at
the College.

H. KOSITCHEK & BROS.,

(Successors to H. LEDERER & SONS.)

LEADERS OF

Fashionable Clothing and Gent's Furnishing Goods.
LANSING, MICHIGAN.

E. C. HONEY,

DENTIST.

Office opposite Hotel Downey, over Savigny and Christmas.

A. W. PATTERSON

Has the Largest and Most Complete Line of

BOOTS AND SHOES

To be found in Lansing. Small profits and quick sales. Would be
pleased to have all M. A. C. boys call and see me.

218 Washington Avenue South, Opp. Hudson House.

ABOUT ADVERTISEMENTS.

STUDENTS, LET US PATRONIZE THOSE WHO PATRONIZE US. THOSE WHO TAKE ENOUGH INTEREST IN US TO ADVERTISE IN OUR PAPER SURELY DESERVE OUR PATRONAGE.

YOU WILL WANT

A NEW HAT soon, and in looking for a place to supply your wants permit me to call attention to my Hat Department, believing it the largest and finest in this city. Selected personally in the Eastern markets, you can depend upon the styles being the very latest, and prices right. If you want a high-grade hat, buy none but the Celebrated Youman's New York Hat—the finest, nattiest hat made for young men. Also full and complete line of Knox, Miller and Dunlap shapes at \$2.50, \$3.00, and \$3.50.

The Automatic, Lace-back Suspender is unquestionably the best wearing, most comfortable suspender on the market. I have them at 50c., 75c., and \$1.00. Try them, and you will use no other.

Neckwear is a department that receives much of my attention, and am always prepared to show you the latest novelties as they appear.

It will be to your interest to look through my Underwear stock before making your purchases. I bought it right, and am prepared to make you attractive prices. One Dollar buys the best suit of Merino Underwear you ever saw; Shirt finished with French neck and ribbed bottom; Drawers with satteen fronts and straps. Wool underwear from \$1.50 suit to \$7.50.

When you buy an Umbrella, get a good one—only costs a trifle more than one of these trashy things made to sell and not expected to wear. The "Century" is undoubtedly the best wearing cover made, and guaranteed in every particular. Come in and see them before buying.

For a nice dress shirt you will be pleased with the Columbia or Monarch—fine fitting and always the latest styles.

For 50 cents, will sell you the "Giant" Unlaundered Shirt, the best-made and finest fitting shirt on the market at that price; and 75 cents buys the finest Unlaundered Shirt I carry, and is a better shirt than you have paid \$1.00 for many a time.

Collars, Cuffs, Canes, Handkerchiefs, Hosiery, Gloves, Mufflers, Jewelry, in fact anything in the way of nice furnishings, you will find 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,

No. 103 Washington Avenue North.

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.

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.

You will find the Largest Assortment of

Fine Boots & Shoes

AT

H. A. WOODWORTH'S

115 N. Washington Ave.

Repairing

Neatly

Done.



SEELY

DRUGS, PERFUMES, SPECTACLES.

CITY HALL BLOCK,

Lansing, Mich.

W. . 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 snropshires and Short Horns of the most fashionable strains for sale.

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

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.

CHICAGO MEDICAL COLLEGE,

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

Medical Department of the Northwestern University. Session of 1890-91.

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

The Thirty-second Annual Course of Instruction will begin Tuesday, September 23d, 1890, and close Tuesday, April 28th, 1891. 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 South Side Dispensary and Amphitheatres 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.

For further information or announcement address

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

COLLEGE BOYS, Make **A. M. EMERY'S Book Store** your *Headquarters* while you "wait for the wagon."

College Text Books and Stationery Constantly on Hand.

A Large Stock of Miscellaneous Books, Albums, Paintings, Engravings.

Gold Pens, Wirt's Fountain Pens, Picture Frames and Wall Paper,
at Reduced Rates to the Students.

PROF. MCEWAN'S \$100 LIBRARY in stock.

A. M. EMERY, 113 Michigan Avenue.

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.

ABER'S SHOE STORE

IS HEADQUARTERS FOR

Reliable Footwear Specialty

Gents' Medium and Fine shoes.

When your Shoes are in distress call on

ABER.

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, 289 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.

GENTS' FINE SHOES A SPECIALTY. EXTRA EFFORT
MADE TO PLEASE COLLEGE STU-
DENTS IN STYLES AND PRICES. **104** Washington Avenue North. **104. PARMELEE & JESSOP.**

DENTIST.

L. G. PULLEN, D. D. S.,

Recently of Philadelphia, has located in this City to practice the profession of Dental Surgery. Possessing every modern appliance for the successful treatment of the natural teeth, also the replacement of lost teeth by the most approved artificial substitutes. Office, 103 Washington Avenue, over Mifflin's store, Lansing, Mich.

WHEN IN WANT OF

Boots and Shoes,

Remember the place to buy good goods cheap is at

D. R. SALISBURY'S,

Corner Baird and Hudson Block, opposite Hotel Downey,

LANSING, MICH.

ARTHUR A. EICHER,

LIVERY,

Boarding and Feed Barn.

106 Grand Street North, Lansing, Mich.

J. R. POTTER,

AGRICULTURAL COLLEGE

BARBER SHOP,

Room 28, Williams Hall.

FOR THE FINEST

Photographic & Work

—GO TO—

CASSEY & RILEY,

OVER LANSING NATIONAL BANK.

SPECIAL RATES TO STUDENTS.

OUT-DOOR GROUPS MADE ON SHORT NOTICE.

LUNCH COUNTER.

THE GEM.

The Best Lunches and Warm Meals at all hours.

Deference shown to M. A. C. boys.

G. M. HASTY,

117 Washington Ave. S.

MUSIC.

Latest Music, Guitars, Banjos, Violins, Organs, Pianos, in fact, everything in the line of

MUSICAL INSTRUMENTS,

At rock bottom prices. Students' patronage respectfully solicited.

SANBORN & CO., 233 Washington Ave. S.