

THE SPECULUM.

VOLUME XII.—No. 3.

AGRICULTURAL COLLEGE, MICH., OCT. 10, 1892.

WHOLE No. 65.

Can Legislative Appropriations for our College be Better Regulated.

A. C. BIRD, '83.

EDITOR SPECULUM—The successful diplomate does not seek the publicity of a magazine article in which to unfold his plans. Nor does the scheming lobbyist proclaim in advance the means he intends to employ to accomplish his ends. While laying no claims to the shrewdness of the one, or the seductiveness of the other, yet would I not willfully injure the cause which I hope to aid by a neglect of a proper consideration of the methods which experience has proved to be most successful. And although I doubt not the discussion of my subject might more fittingly take place in the seclusion of a board meeting or a committee room, the columns of the SPECULUM afford the only means of reaching all concerned.

It is well understood that the financial prosperity of our college, under its present organization, is largely dependent upon the biennial legislative appropriations. On the liberality or parsimony of the body of men composing our State legislature, does the growth of our Alma Mater to a great extent depend. If the meaning of this were simply that the individual sense of justice, common to this body of men, dictates the amount of the appropriations, then our problem of regulating the supply to the needs of the institution would be easily solved. Only a simple presentation of facts to that august body would be necessary. But dire experience has shown repeatedly that a personal enemy to the college, if possessed of political influence on the floor of

either house, or more often still in the lobby, is sometimes more powerful than justice. Or that the tacticians of the different parties, knowing that small appropriations in the aggregate will give them "economy" for their watchword before the people during the next campaign, mock at justice with their parsimonious treatment of M. A. C. and kindred institutions, cracking the party whip in close proximity to the ears of any conscience stricken follower who proposes to be true to his office.

These and many similar occurrences play havoc with all plans for college expenditures, and make it necessary not only to deserve the appropriations asked for, but also to take means to secure them in spite of all possible difficulties.

The plan which I have to suggest is simply to interest as many of the alumni as possible in each legislative district to take an active part in the interests of the college. Let us suppose that only one alumnus in each party in each legislative district in the State could be induced to work with this object in view. Let him begin work as soon as his party's nominations for the legislature are made, or even before, where sufficient tact and good judgment can be commanded. Let him visit the candidate and explain to him fairly the needs of the institution and get an expression of his views upon the subject. I am well aware that before election promises are not rated very highly by the world at large, but my experience has been that an agreement of this nature where the issue is one of such simple justice is rarely broken.

I do not think it necessary or prudent, except in extreme cases, to exact promises for specific appropriations; but rather to

obtain a general promise of support for all legitimate appropriations. And when the candidate has expressed himself in harmony with the college and its work, let not the alumnus forget to reciprocate with some vigorous work in support of his candidacy.

After election, let the alumnus belonging to the party of the successful candidate discreetly keep said legislator-elect in mind of the college and its needs. And above all, after the estimates have been made by the State Board, let the alumnus be sure that the necessity for them is thoroughly understood, and that his opinion of what is right in the matter is known by the member-elect. In most cases he will place more confidence in the alumnus who resides in his own district and whom he knows to be an honest man, than he will in the average legislative orator, or the lobbying sorehead. There is no use in denying the fact that there is virtue in advice which comes from a legislator's own constituent, particularly, when that constituent was an active factor in his election.

In many districts the number of alumni who can be interested will enable the influence to be many times multiplied. And I do not believe there is a district in the State where at least one such friend of the college can not be found.

It is plainly evident, however, that this plan is worthless unless it can be systematized. Who shall take the lead in this matter and see to it that alumni are appointed to do this work in every portion of the State? If this were the year for alumni reunion a committee or committees might be appointed to take the movement in charge and push it to a successful issue. Two years hence such a course will be the natural one. But there is a body of men who have a better knowledge than any other of the needs of the college, and who at the same time have the widest possible acquaintance among the alumni. I refer, of course, to the college faculty, in whom the

alumni universally have the fullest confidence. If they think the plan feasible they are in a position to give it a fair trial. It would of course necessitate considerable extra work on their part, but if the plan should prove successful this year the work could be largely turned over to the proper alumni committees hereafter. Although I have long thought that if the head of each department would, at the time of the meeting of each legislature, address a circular letter to every alumnus within reach, briefly reviewing the work done the past two years, and the needs of his department during the next two years, that much influence might and would be brought to bear, both on the State Board of Agriculture and the legislature, from a hitherto inactive source. Our alumni is rapidly growing strong in numbers and in influence, and almost to a man will be found loyal to the college and its work, if only some means can be devised by which this influence can be systematically secured.

Could we hereafter hold our reunions biennially the August previous to each State election, instead of triennially as at present, much more good in this line could be accomplished.

In closing let me simply say that I submit this imperfect plan in the hopes of drawing out further discussion of this and kindred subjects. Let us have more such articles as those of Mr. Howe and Mr. Sherwood.

Observation.

L. A. WILSON, ECLECTIC SOCIETY.

By the word observation we ordinarily mean viewing or taking notice of. When used thus, any person who uses his powers of vision and sees the commonplace things about him is an observer, even though the things he sees are looked at daily by many people, even though they have all been described and talked about, and analyzed time after

time, yet he who notices them is said to be an observer. Observation should mean more than this. In its truest sense, observation is synonymous with investigation. No man is a true observer who sees only those things which are evident to ordinary people. Observation is looking into the hidden recesses of objects, and bringing to light, and presenting to the world's view, those points which have escaped the notice of the great mass of humanity. It is not observation for a botanist to find only those points about plants which all botanists know to be true. It is not observation for an astronomer to see only those phenomena in space which are familiar to all astronomers. They must break away from old ideas, and by real observation discover something new for the world. No scientist is a true observer who follows along blindly in the paths marked out by his predecessors. A few centuries ago, the scientific world was buried in gloom which had become so thick and impenetrable that the best minds could not pierce its depths. The observers came along and with their all-powerful visions, broke into the shadowy recesses and revealed great facts and principles. Such men were Newton, Galileo, Kepler and Boyle. It was thus that astrology was dethroned and astronomy enthroned, it was thus that superstition and ignorance gave way to Christianity and enlightenment. In this sense observation approaches originality in meaning and thus it should be used.

Let us see how we will be benefited by cultivating habits of close observation. By this means, our intellectual growth will be greatly accelerated. "The mind grows by what it feeds on," is an old maxim. It will be influenced in proportion to the quantity and quality of its food; hence, if we store our minds with valuable knowledge, shunning all that is low and base, it will be proportionately benefited. If we become observers we must be thoroughly acquainted with every part of our work. Thus if we

are at work on any branch of science and trying to become original investigators, we must thoroughly understand every detail of that branch and be able by observation to detect anything out of the usual order. To become thus proficient in any one science, will require an amount of study and hard work that cannot fail to have its good effects on our intellectual development.

Nothing is more potent in drawing man's thoughts up to the realization of the goodness of the Creator, than a close observation of the works of nature. Every insect and every flower, even the most despised, have such wonderful beauty of structure that all the works of man cannot surpass them. Every cell reflects to us the thoughtful care of an All-wise Creator. As we become observers in the natural world we begin to see these infinite beauties and our thoughts turn to him who made them; then we think "How great and good God must be." It is thus that our moral natures are raised to a higher realm of thought. The ordinary plodding man goes along through life seeing none of these marvelous beauties, and does not realize how much he has to be thankful for. The farmer who turns under the green blades of grass with his plow or works among his crops, does not know of the many evidences of the work of a divine hand that exist in such profusion everywhere about him. I would that his condition might be bettered and that he might have more time to become an observer of nature's works, and I believe his moral character would be improved.

Again one may, by being an original observer, bring to light something that will benefit the world. We find especial opportunities for this in science. Not a year passes without bringing to light some important scientific discovery. Who are these discoverers? They are the observers, with vision more powerful than any of their predecessors, and by means of which they

were able to look farther into the mysteries of science and make these discoveries. It is thus by their work that science has been revolutionized and set upon a firm basis of law and principle. If it had not been for these observers we would still be living in as dense superstition as did the people of a few centuries ago, when a person's life was supposed to be governed by the movements of the stars. Much has already been done in this way, but there is still much to do. The field is a broad one, and no one need falter for lack of space in which to work. By training his powers of observation now, one may be able to do original work in some branch particularly suited to his taste.

Not only may we do something for the world, but we may also bring honor and wealth to ourselves. Perhaps it may be said that seeking after honor is prompted by an unlaudable ambition. But why so? Nearly every great and noble deed that has been done was accomplished by some one who thought the undertaking would bring honor to himself. Let our intellectual and moral interests and the benefits to the world be first considered, and then honor and wealth will follow in proportion to the completeness of our success. The names of all men, who by their wonderful powers of observation have discovered truths and been benefactors of mankind, are written on the pages of history never to be effaced.

But let us see how we can best become true observers in the natural world. It can only be by a gradual improvement, which must be brought about by continued study. We must first become observant of the ordinary things. If we intend to follow any branch of science, we should first choose that branch which is most to our liking, and then by close application familiarize ourselves with all its details, and by continued experimenting and observing, we can so train our powers of observation that we will be able to do original work.

That force which caused the apple to fall

had been acting since the creation of the universe, yet no one had ever thought of it up to the time that Newton brought into play his wonderful powers and announced the law of gravitation. So with the law of the pendulum, yet it was left for Galileo to discover.

I have attempted to describe but the ideal state of man's powers of observation. Few of us, indeed, could ever hope to attain such perfection. But we may, by diligent work and by properly training these powers, become in a greater or less degree true observers.

Ventilation.

W. F. HOPKINS, DELTA TAU DELTA FRATERNITY.

The question of ventilation is of vital importance to the human race. The origin of artificial means of ventilation is not known. It is defined by Webster as, "the replacement of noxious or impure air in any enclosed space by pure, fresh air from without."

The question of why ventilation is of so much importance may seem a simple one to some people, but to all those who wish to have in their apartments pure, fresh air to breathe, it is of great concern. Let us look for a moment at some of the tenement houses of our large cities and see if we cannot find a ready example to illustrate why ventilation is of so much importance. On the seventh or eighth floor of one of these houses, we find a family of perhaps eight persons, all living in one room, perhaps there is but one window and only one door and therefore not much chance for ventilation, unless it be through a hole in the window pane or in the door. In a place of this kind we find the death rate much greater than in a place where the ventilation is good. Since a good system of ventilation has been introduced into the "Barracks" the death rate has been decreased two per cent per thousand people.

The purity of the air admitted for ventila-

tion depends of course largely upon the location. If a place be surrounded by high buildings or a court the circulation of air will not be as good as it might under other conditions and hence will not be as pure as it should be.

Among the methods of ventilation the following are the most important: First, the natural method which is by means of the diffusion of gases and the action of winds. Second, ventilation by means of a chimney. In this case where there is a fire in the stove the hot air rising causes a draft which makes a partial vacuum; the surrounding air rushing in fills the vacuum and this keeps the air in motion. In the case of a grate, the fresh air comes from the under side of the grate and thus becomes warm before entering the room. If there is no fire in the grate ventilation is carried on, to a certain extent, in the same way; the wind blowing over the chimney at an angle to it causes a draft. The third method is by means of windows and doors. This method can be used by anyone where there are two doors or two windows or a door and a window, opposite or nearly so. By opening a window and a door a current of air is created; the same effect may be obtained by dropping the upper sash of a window and raising the lower sash; it is usually best to put a thin strip of wood under the lower sash, for by so doing a draft is avoided and the current will then be in an upward direction and between the two sashes. The fourth method is by machinery or mechanical devices. Under this head is included fans and the exhaustion of air by heat or steam. Wind is utilized for ventilating the holds of ships by the use of cowls placed so as to face the wind and down which the air is conducted into the hold, while others placed in reverse positions are used as escapes for the foul air. Fans, run by steam, water motors or electricity are used in public places, as in ice cream parlors, billiard parlors, hotel offices,

etc. The fans do not produce ventilation direct but aid it by keeping the air in motion. Fans of one horse power revolve about 330 times per minute, furnishing 15,000 cu. ft. of air.

Doctor Arnold argues that an opening in the chimney near the ceiling, guarded by a valve, is one of the best methods for ventilating a private room, as it allows the foul air which will rise when heated, to escape and if there is a draft caused by this it will not be felt as it is so high up.

The most common method of ventilation, in public buildings, is by means of grates in the floor or in the walls near the floor, and an opening in the ceiling for the escape of the air. Ventilation by windows and doors is also used extensively, especially in small rooms.

In private houses most any of the above mentioned methods may be used. The necessity for good ventilation in a public place is just as great or greater than in a private dwelling, for here all classes of people are together in great numbers and it does not take long for the air to become foul. The effects of poor ventilation have to a certain extent been greatly reduced by the introduction of gas and electricity for heating and lighting purposes. The electric light does not give off any gas nor does it absorb any of the oxygen of the air. For examples of places where the ventilation is usually the most defective, we have but to turn to our court-rooms, the pits of our large theatres, and even some of our churches. In these places are collected people from all stations of life, and if the ventilation is poor it does not take long for the air to become full of carbonic acid gas which is very poisonous; the presence of four per cent of this gas in the atmosphere will not support combustion and ten per cent destroys life.

In the construction of a building due attention should be paid to the ventilation, to see that it is perfect and not liable to become defective, for upon it depends to a certain extent, the health of those who are to occupy the building.

SCIENTIFIC.

There was a full attendance at the meeting of the Mechanical Club on Friday, Sept. 30, and a good program was rendered. J. C. Patrick read the following paper on the application of electricity to mining:

Electricity has never, since its first introduction, been so thoroughly experimented upon and so much studied as at the present time. Even at this early stage of the development of its economical resources it has an exceedingly wide field of application. It is used in many ways, as in the driving of motors and machinery, and for lighting purposes. The soldier, in wars that are to come, will undoubtedly recognize in it his most powerful ally, both as a means of offense and defense; and to be a competent engineer it will soon be that one must be able to run a dynamo as well as an engine.

Different trades and professions have put electricity to various uses, as the needs of the case demanded, but below the surface of the earth this power has not yet seemed to reach. In the thousands of mines where a vast army of men are daily and nightly engaged in one of the most important of the occupations which has put this age in advance of all others, the electric light and the electric motor are practically unknown. Until a few years ago carts and mules were used for transportation in mines, which process was very slow and expensive, and it is now only fourteen months since the Jeffrey electrical coal mining machine made the first really practical test of electricity in the mining of coal on record in this country. This machine is called the electric mining locomotive. It carries a very large motor, and its maximum power has not yet been demonstrated on a level, although it has hauled as high as fifty tons in one train up and over a four and one-half per cent grade.

The lighting of mines by electricity should be one of the first things looked to; as there is every year a great loss of life and

property, caused by the use of oil lamps. As an instance of this, there occurred last May, an accident in a mine in which lamps were used, at Ashley, Pa., in which thirty-one out of thirty-three men were killed. A sudden current of air entered the mine and extinguished all the lamps. The men were unable to find their way out, so they all congregated, and sent three of their number in search of a way of egress. Presently these three came upon what they supposed to be an old hold, and one of them, thinking that here the air would be fresh, lit a match. A terrific explosion occurred, and only two of the men survived. This is only one of the many similar accidents that have occurred in mines lit up by these oil lamps.

As you are all familiar with the mechanism of these lamps, I will not stop to explain them. You will readily see the advantages of the incandescent lamps over the oil lamps. Of course, the incandescent lamps are made larger and stronger for mining, than for ordinary purposes. Another very important use for electricity in mining is that of the electric motor for hoisting, in mine inclines. The motors are connected to ordinary mine hoists by spur gearing and paper friction wheels. These hoists are all under ground, at points where it would be both difficult and expensive to obtain power in any other way. There are also motors in use for running blowers, rock crushers, etc.

While the application of electricity to mining has been a pronounced success, there are still two obstacles in the way of its general utilization. These are the lack of electric drills and electric pumps. As soon as an electric drill is produced that will do the work of an air drill, and an electric pump that will take the place of the present sinking pump, the time for the general application of electricity for all mining purposes will be at hand.

M. F. Loomis then read a paper on the "Street Railway System of Grand Rapids,"

and H. Colquitt rendered a select reading on the "Care of Steam Boilers." The following is the abstract of an article upon "Modern Engraving" presented by Mr. W. B. Stutsman:

To engrave has but one meaning, viz.: that of marking by incision. The rudest mark, if made on the substance is engraving. Engraving was first introduced by the Chinese in the fore part of the 15th century. The history of engraving is of course very interesting, but it would require too much time to relate it.

In giving a description of some of the modern kinds of engraving, we will confine ourselves to the three most important processes—that of wood engraving, zinc process and lithography. These three are the most important, as they are used for illustrating magazines, etc., more than any other processes of to-day.

Wood engraving is the oldest and yet is what we may call a modern process. In wood engraving there are five distinct divisions. 1. The drawing or photographing of the picture on a block. 2. Engraving. 3. The moulding in wax. 4. The electrotyping. 5. Setting and printing.

A block of box-wood is first procured, sawed cross-grained and polished to a very smooth surface. A coat of flake white is then applied, making the block of a grayish hue. This coat is to keep the ink from filling up the pores of the wood to any great extent. The drawing is then made on the block either by an artist or by photography. The block is then ready for the engraver who must use his skill in making the engraving look as near like the original as possible. The lights of the drawing must be cut out so as to leave the darks from which the print is to be taken in clear distinct relief.

After the engraver has finished, a proof is taken; a wax mould is then made from it. This wax mould is then covered with black lead and electrotyped in copper. It is then ready for printing.

When cuts are to be made hurriedly such as we see in the newspapers of to-day—a block of wood is taken and covered with plaster Paris. The artist then takes a sharp instrument and makes the drawing on this. From this they can easily get a cast by pouring melted metal on the engraving. The fine cuts made by Harper Brothers and Century Company are obtained with much labor. In making the cuts for machinery, etc., a drawing is first made on the block of wood by means of India ink washes and then the engraver uses what we might call a planer to cut out the lights.

Zincography is perhaps the most expensive of the three processes. In this, a zinc plate is carefully polished and cleaned. The face is then covered with a solution of bitumen in benzole and allowed to dry. It is then exposed under the negative we wish to engrave. The action of light is such that the parts not acted upon by light are left in relief. After a sufficient exposure the soluble parts are washed out with turpentine, leaving bare metal on the lines not acted on by the light. It is then slightly etched to give the bitumen film a greater relief. Cuts of this kind can be seen in *Harpers' Weekly* and also in our college catalogue.

In lithography we have one of the simplest, most useful, and extensive of the industrial arts. It is based on the antagonistic qualities of grease and water. A greasy lithographic ink is made to adhere to a kind of limestone which is obtained in Bavaria. After the drawing on the stone has been made, a thin film of gum Arabic is placed on the stone. The stone is then dampened and ink roller passed over it. The printer's ink adheres readily to the greasy crayon, but the water keeps it from the rest of the stone.

In making pictures by this process, many colored plates are used. The lithographic artist must analyze the picture to be lithographed and determine what tints laid over each other produce certain tints, which requires a very delicate eye.

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 EDITORS.

UNION LITERARY SOCIETY.	
H. F. PALMER,	Editor-in-Chief, Literary Articles and Editorials.
PHI DELTA THETA FRATERNITY.	
L. H. BAKER,	Science.
ECLECTIC SOCIETY.	
A. T. STEVENS,	College News.
OLYMPIC SOCIETY.	
V. J. WILLEY,	Personals.
HESPERIAN SOCIETY.	
W. L. HARVEY,	Athletics.
DELTA TAU DELTA FRATERNITY.	
R. M. KEDZIE,	Colleges and Exchanges.
E. B. HALE,	Business Manager.
L. A. WILSON,	Asst. Business Manager.
SEC. H. G. REYNOLDS,	Treasurer.

AGRICULTURAL COLLEGE, OCT. 10, 1892.

REMEMBER that we have a few of those indexes left. Bring in your old SPECULUMS and get them bound. If you lack any of the back numbers they can be supplied from this office at regular rates.

"YE editor" wishes to apologize a little for the many mistakes that occurred in our last issue, and also for the lateness of receiving that many of our subscribers must have experienced. In the first place the material was sent to the printer at about the usual time, but he experienced some delay and thought it best to hurry up things a little by going to press without sending out some of the proof. This caused many of the grammatical errors found, and also the cutting into two parts of the item found in the news column.

As regards the time that our subscribers away from the college received the paper, we would say that there was some seemingly unnecessary delay among the post-office officials. Some of our papers did not leave

the office here until the second day after their delivery to the office. Forgive our mistakes and delays this time, we will try and do better hereafter.

WE hope no one will fail to read the article in this issue, written by Mr. A. C. Bird. When our students and alumni take action in political matters as suggested by Mr. Bird, the institution will be bettered financially. Then let us all help to carry out the plan as suggested.

OUR next issue promises to be an unusually attractive one. In that issue we intend to have a cut and complete description of the botanical building now in process of construction. Inasmuch as this is one of the finest botanical buildings of the country, we think a cut and description will be interesting to all. We also purpose to have printed the oration that captures the medal in the oratorical contest the 28th of this month. Considering these two important literary articles, we think all will anxiously watch its publication.

THE time and place for the delivery of the regular junior and senior orations seem to be somewhat unsatisfactory. During the delivery of orations at chapel, there is always more or less of outside noise to disturb the audience and *rattle* the speaker. Persons are walking through the hall, teams are passing by the building and worse than all, the almost deafening noise of the lawn mower is sure to be heard at chapel time. For the afternoon speeches there is always the lack of an audience. A person cannot do justice to an oration when he has to speak to vacant seats. Who will be the person to suggest a remedy for these things? Have it so arranged that our speakers may have quietude as well as an audience to inspire him to good work in the delivery of his oration.

GREAT preparations are being made for the college exhibit at the World's Fair.

Those having this in charge intend to have all departments well represented; but it seems to us that there is one part of our work here that, thus far, no steps have been taken to have it properly represented. I refer to our society work. No one questions the value of the work done in the societies; but each society man realizes that without society work, a considerable part of his education would be neglected. Then why can't our society work be represented at the World's Fair? We have no idea as to the best way to represent it, but we will leave that for others to suggest. We only urge that this matter be taken up so that the World's Fair may see the society work of this college properly represented.

BEFORE our next issue shall have reached its readers another presidential election shall have come and gone. We feel it a duty of every young man who has attained the proper age to be present and help decide the contest. He should not go to the polls and vote indiscriminately, but should study and vote as he firmly believes. I will not undertake to discuss the merits and demerits of our national candidates or the principles they represent; but in this item I wish to urge that each student and alumnus of the college see to it that they cast their vote in the interest of the college. We are all proud of M. A. C. and if we exercise a little care to select those candidates that are in sympathy with our work, the effect will be noticed in the result of election.

As a last chance we wish to put in a word for our State candidate, H. R. Pattengill. Students and faculty alike, irrespective of party, seem to be enthusiastic over his candidacy. All can feel that when they cast their vote for him, it is cast for a man well qualified for the position, and a man who is in sympathy with the M. A. C. Then let us all go to the polls and work for him and see to it that those persons who are apt to slight the latter part of the ticket, know of his fitness for the position of Superintendent of Public Instruction.

FOR some time the prices that students have had to pay for text books and stationery has been unsatisfactory. In viewing the price list of sundry articles here and then of some other firm, we find that goods are sold here at an enormous profit. For instance, one article that is sold here for a little over two dollars can be bought in half dozen lots for a little over one dollar. Now certainly this article can be furnished by the down town dealers as cheap as that and so this makes a good big profit for some one. This is only one example, but many more could be cited. Pencils, record books, and a few of the text books are equally high. Now what can we as students do to lower the prices of these goods? In the first place, let us have competition. Under recent competition, record books dropped $33\frac{1}{3}$ per cent and still prices were high. Shall we allow one man to control prices here? Must we pay his prices, no matter how much he is making on the article? Can we allow him to have a monopoly of all? We would not say that the furnisher of our supplies here has bought off other dealers of town, but we would say that other firms have been brought to the idea that book business here at the college does not pay. Let us find out for what such supplies as are used here can be furnished, and then if the book firm that is now selling books and stationery does not come down to our prices, let us form an association having for its object the furnishing of students' supplies. In years past when the students did not have control of our boarding system, high price was paid for board, now board is furnished at a reasonable rate. In the same manner let our students take hold of the text book question and so systematize it that goods can be furnished at something less than preposterous prices.

A FEW years ago the title by which many people spoke of this school was "the poor man's college." Even to this day circulars are sent out telling how cheaply a person

can obtain an education here. This clause has a peculiar significance to the student of to day. Unfortunately we have not the experience of the past to cite, but in conversation with students of former years we find the expenses of students here are increasing year by year. No longer is this the "poor man's college," but it seems to be about equal with other colleges in the amount of money necessary to complete a course. There are many necessary expenses that it seems are as low as they can be; but there are many unnecessary expenses that are drawing heavily upon all. We would not say a word if each student could regulate his own amount of expenses; but as things are now situated, a bare majority of a class fix the expenditures of the whole class.

Each individual, if he wishes to keep up with popular sentiment, must pay his share of the expenses whether or not he receives any benefit therefrom. As an example of this let us take the case of the hop lately held. Leaving aside the propriety of this kind of gatherings for social amusement, let us take up the question of expenses. A class gave the hop, a class had to pay the expenses; but how many out of that class that paid their equal share of expenses did not attend the hop and seemingly did not receive one iota of good from it. Hardly one-half of the class and barely one-third attended and took full part in it. Is this the best way to conduct a social gathering? Should a class of students be taxed to pay for that from which they receive no benefit?

The above is but one of the many illustrations that might be cited where a large amount of extra expense is incurred. These expenses taken as a whole are detrimental to the institution. Ought we not as students to find some cheaper amusement, something that could be participated in by all who have to pay a share of the expenses? If the hop is *the* amusement, let them be gotten up and *paid* for by the class of students that take part in them.

COLLEGE NEWS.

Mrs. G. C. Lawrence is teaching the faculty pupils.

Half-term examinations are over with, that is for some.

The Botanical Club is having some interesting meetings.

Miss Pearl Kedzie has gone to Olivet to take a course of study.

The old testing room has been fitted up for steam laboratory work.

The campus is looking exceptionally fine for this season of the year.

The college post office is now an international money order office.

Miss Jessie Beal has gone to the university where she will take music, German and biology.

The State board has authorized \$200 for library books for the Agricultural Department.

Dr. Kedzie was invited to lecture before the Kansas Academy of Science at Atchison, Kansas, October 13, but declined.

Professor Wheeler while at the Hillsdale fair will make some collections in the vicinity of Jonesville before returning.

President Clute and Prof. Taft attended the Grand Rapids fair and Prof. Taft secured some samples of fruits for models.

Dr. Grange was officially called to Elk Rapids to examine a suspected case of glanders. He found it a well marked case.

The president has ordered 4,000 more copies of the bulletin on smut. This will make about 10,000 that have been published.

A Historical Club is about to be organized under direction of Professor McBride. Its object is further research into history.

The Agricultural College Land Board has sold 5,940 acres of Agricultural College lands at auction, at an average price of \$8 per acre.

The Mechanical Department has just purchased some new Centigrade thermometers which are graduated to tenths of a degree.

The Agricultural Department has 150 cross-bred Merino and Shropshire lambs which they will use in feeding experiments this winter.

There will be sixteen farmers' institutes this winter, four long and twelve short ones. As to date and assignments we do not yet know.

Professor Kedzie has placed his thirty-eight varieties of Australian wheats in the hands of the Farm Department for experimental purposes.

Professor Harwood visited the Milwaukee fair and the experiment station of Wisconsin. He had the interests of experiment station work in mind.

The secretary's office has been frescoed on the ceil-

ing. The front office is now open at all hours so that the telephone may be reached in cases of necessity.

A new plot for grasses has been located and prepared just southwest of the boiler house. The grasses of the delta will be moved to this and all will be near the wild garden.

The juniors gave a hop September 23 which was well attended, highly appreciated, and hugely enjoyed by all. The decorations, music and other arrangements were excellent.

Professor McBride has requested of the State board the privilege of building for himself a house on the campus. The board has not yet made reply. This is the favored custom at Cornell.

Herbarium specimens, corn with roots on, and other arrangements are in progress at the Botanical Department for our Columbian exhibition. The other departments are on the way.

A company of cadets from M. A. C. commanded by Captain H. B. Fuller gave an exhibition drill at the State fair on Friday. As the boys always do, they did credit to themselves, their commander and the college.

Mr. W. F. Sesser, of St. Joseph, has been taking pictures of college buildings, portions of the campus and such other pictures as will well represent the college. These are to be taken to the Columbian Exposition.

The faculty has recommended that the State board take one week from next summer term and one from the fall term and thereby give students and faculty members who desire, an opportunity to visit the World's Fair three weeks.

There have been sown at the college sixty varieties of Michigan wheats. These are to test varieties and make further examinations. They have also sown a number of varieties in large plats so they may meet requests for samples of wheat.

A broad door-way has been cut through the walls connecting the machine shop with the wood shop. This was done so that heavy castings and goods for the machine shop could be unloaded at the south door and easily taken to the shop.

At the last board meeting, President Wells, Mr. Butterfield, Mr. Chamberlin, Mr. Glidden, and President Clute were appointed as a committee to consider the practicability of having a winter course of instruction, thus enabling more farmers' sons to attend.

The *Eagle*, our newsy little college paper, published by Roscoe Kedzie, has in its number of September 21, a very interesting letter from F. L. Reynolds, dated at Wiesbaden, Sept. 3, '92. We would like to give it to our readers but cannot. Subscribe for the *Eagle* and get this.

Steps have been taken toward having an encampment of M. A. C. graduates and students some time during the World's Fair. Should this be accom-

plished it is hoped that arrangements will be made by which students may attend this exhibition with comparatively small cost.

Professor Cook has had on exhibition for several days, in front of the library, a Gila Monster from Arizona, the largest and most poisonous of North American lizards, also a leather back or soft shelled turtle which was taken from Grand River at Lansing and sent here by Mr. Whitehead.

Dr. Kedzie expects to attend the annual meeting of the American Public Health Association in the city of Mexico, November 29, where he will read a paper on "The Ground of Safety." He was president of the association ten years ago when it met in Indianapolis, and is still a member of the executive committee.

H. R. Pattengill addressed the students on the political issues of the day in the chapel, Friday, September 30, at five o'clock. The same evening at eight o'clock, Rev. Washington Gardner addressed the students on "The Struggle for Chattanooga." Both lectures were interesting. Mr. Gardner, by his humor, oratory and clearness of description held his audience for two hours.

The president recently visited Chicago in the interests of the college at the World's Fair. He conferred with Dr. S. H. Peabody and applied for 2,000 square feet of floor for the college exhibit. This will undoubtedly be granted and all the departments will be represented, so that the workings of the college may be made familiar to all who visit the exhibit. The methods of instruction will also be illustrated.

September 16, at 4:30, Louis A. Clinton, class of '89, was united in marriage to Miss Florence H. Seage of Lansing. The ceremony took place at the residence of the bride's parents at the corner of Ottawa and Chestnut streets. There were about two hundred guests present and many beautiful presents were given. After a sumptuous repast the happy couple left for a two weeks' trip and are now at home at 113 Chestnut street north.

The program of exercises for Columbus Day at the college, October 21, is music, prayer, music, introductory address, President Clute; Prehistoric America, Dr. Kedzie; music, essay, Columbus, Miss Lucy Clute; essay, Our Forefathers, W. C. Bagley; Mechanical Progress of America, Mr. W. J. McGee; Agricultural Progress of America, D. D. McArthur; these short speeches will be followed by an address by Rev. C. H. Beale, of Lansing. After the literary exercises there will probably be a local field day.

The library rules have been changed, so that instead of the old slip system, which endangered the books to being lost, the books are now recorded by the librarian or an assistant and no book is taken out without being charged. The library hours now are for week days from 6:30 A. M. to 7:40 and from 8 to 12, then from 12:30 to 6 P. M. and from 6:30 to 9:30 P. M., and on Sunday from 9 to 12 A. M. and from 1 to 2:30 and from 3:30 to 5:30 P. M. By these hours

students or faculty can not complain of not having library privileges.

Thursday evening, September 15, the Y. M. C. A. gave a reception to the freshmen, to which all of the college population was invited. The program consisted of music by a quartette composed of Messrs. H. J. McEwan, J. S. Man, S. C. Laitner and G. H. Fisher. The president's address by O. B. Hall, instrumental music by M. G. Kains and Mr. Partridge on guitar and mandolin, a recitation by Lucy Clute and a song by Misses Otie Cook, Lillian Wheeler, Fay Wheeler, Cora Stocking, Jessie Beal and Loa Renner. Following the program was a pleasant time of visiting.

A few evenings since the college population had the pleasure of visiting an art exhibit prepared by the ladies of the college. It consisted of hand decorated China pieces by Mrs. Ella M. Kedzie, Mrs. A. J. Cook, Miss Daisy L. Mattis, Mrs. H. G. Reynolds, Mrs. W. J. Beal, Mrs. H. K. Vedder, Mrs. F. W. McNair, Mrs. Lester P. Breckenridge, Miss Jessie Beal and many beautiful water colors by Professor W. S. Holdsworth and Mr. Sanderson. The China pieces exhibited by Mrs. Beal were 100 years old. One piece exhibited by Mrs. Kedzie, which interested the boys, was a plate with a picture of the chemical laboratory on it.

The sub-faculty building or "Bachelor Hall" as it has been christened, is now completed and occupied. It is located between the house of Professor of English Literature and that of the Professor of Agriculture. It is a two story wood structure, nearly square in outline with a square and gable roof. It is divided into two portions front and back, each one having four rooms, all of which are as nearly alike as could be except for location. Each room is supplied with a grate and place for stove if desired, and a small clothes room. The rooms are plainly finished and the wood-work finished in hard oil, thus giving them a neat but not expensive appearance.

The exhibit at the State fair by the several departments consisting of grains, weeds, etc., by the Agricultural Department; grasses, preserved plants, microscopes, etc., by the Botanical Department; injurious insects, in nearly all stages of development, and other instructive objects from the Entomological Department; bones of horses diseased and different diseased portions of farm animals together with veterinary instruments from Department of Veterinary; fruit, vegetables, and apparatus from Horticultural Department; steam engine, tools made by students, iron and wood lathes, levels, compasses, etc., from departments of Mechanic Arts and Engineering, and various apparatus and experiments from the Physical and Chemical Department, made a very creditable appearance and we do not hesitate in saying this will do more to advertise the college than many a printed page. This exhibit was taken to the Hillsdale fair with the addition of 50 lots of dried seed for class work, 50 jars of alcoholic specimens of fungi, pressed grasses, reagents for microscopic work, plant presses,

and all apparatus for collecting and preserving plants, and 100 bottles of seed-weed from Germany. This is accompanied by Mr. Munford for the Farm Department, Mr. Coryell for horticulture, Mr. Wheeler for botany, Mr. Bentley for physical, Mr. W. E. Palmer for the chemical, Mr. B. O. Johnson for veterinary, Mr. Larrabee for apiary, Mr. G. C. Davis for entomology, and Mr. Babcock for Mechanical Engineering Department.

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.

'67.

Henry H. Jennison of Eagle is the democratic nominee for county surveyor of Clinton county.

W. W. Tracy, seedsman with the D. M. Ferry Co., now has four sons in the college, a representative in each of the four classes.

Daniel Strange is leading an extended discussion through the columns of the *Michigan Farmer* on the tariff issue, particularly the tariff on wool. Mr. Strange is the democratic nominee for Congress from the 3d district.

'68.

William D. Place, for the past six years county clerk of Ionia county, is now the republican candidate for State representative from his district.

'69.

Chas. E. Bessey was elected vice president of the botanical division of the A. A. A. S. recently held at Rochester.

'71.

E. B. Fairfield, who has been an invalid for some years, is now much improved in health.

'73.

Henry P. Jenny is now surveyor of St. Clair county. George C. Nevens is superintendent of the public schools at Cheboygan.

The six-year-old daughter of B. T. Halstead died August 11, 1892. This bereavement leaves him with one child, a boy of sixteen, whom he expects to send to M. A. C. next year. Mr. Halstead is a lawyer at Petoskey, and for four years has been prosecuting attorney of his county.

Lieutenant John P. Finley, who was in charge of the government weather service on the Pacific coast for two or three years prior to last November, when he was called to Washington, has been restored to his

old post, in response to numerous requests from business men and scientists in California, Ohio, and Washington. Lieutenant Finley had achieved repute as an expert on tornadoes and ocean storm tracks before going to San Francisco, and he seems to have acquired an excellent understanding of the peculiarities of Pacific coast weather since.—*New York Tribune*.

'74.

Henry A. Haigh is president of the Michigan Club. President C. L. Ingersoll, of the Colorado Agricultural College, has resigned his office to accept the chair of agriculture in the University of Nebraska, as he considers it an advanced position.

R. C. Carpenter is rapidly coming to the front as a mechanical engineer. He has been at Cornell University two years, and is a heavy contributor to the engineering periodicals of the day. His latest work is a text-book on experimental engineering.

'76.

William Caldwell paid the college a visit during his sojourn at the State fair. He is one of Oakland county's most respected farmers. He had many times to repeat a most emphatic "no" to escape the nomination on the republican ticket for representative to the State Legislature.

C. B. Fisk Bangs, formerly a druggist at Arcata, California, is now doing well in the drug business at Grand Ledge.

J. D. Stannard is living at Fort Collins, Colo., where he is assistant to Prof. L. G. Carpenter, '79, in the Colorado Agricultural College. Their work is principally on irrigation ditches.

Don H. Kedzie, editor and proprietor of the *Western Liberal*, Lordsburg, New Mexico, paid the college a flying visit September 7th. The *Liberal* is a bright, newsy sheet, and has a large circle of influence in New Mexico. It is for Harrison and Reid every time.

WITH '76.

Mr. Frank P. Davis is the engineer in charge of the Nicaragua canal.

'77.

Bion Whelan, M. D., is now a successful practitioner at Hyde Park, Chicago.

Mason W. Gray, of Pontiac, is now a member of the Michigan board of health.

Albert Dodge is engaged in the practice of law in Grand Rapids, and is grand secretary of the Grand Lodge of I. O. G. T. He has been re-elected five times and is a candidate for Right Worthy Grand Secretary of the Grand Lodge of the World.

'78.

Richard H. Gulley has announced his intention of taking a vacation from teaching and try the fortunes of the life insurance business.

Geo. E. Breck, lawyer at Paw Paw, has become one of the leading stockmen of Michigan. He has been

for six years secretary of the Michigan Shropshire Sheep Breeders' Association. He is also an enthusiast and makes a specialty of breeding Cleveland Bay horses. Is said to be very influential in his community.

'79.

A. A. Crozier has just issued a fine glossary of botanic terms which is spoken of in the highest praise by the leading botanists of to-day.

'80.

W. W. Remington, superintendent of schools at Boulder, Colorado, is considered one of the best educators in that State.

'81.

F. J. Root, a leading Plymouth farmer, visited the college with his wife September 14.

A. H. Voigt is said to be prospering finely in the glorious climate of California. He is in the furniture business at Los Angeles. Is married and has one child.

Howard M. Holmes, formerly connected with the *Ann Arbor Register*, is now a hustling newspaper reporter in Detroit.

Alva Sherwood, who has been taking post graduate work in agriculture the past summer, has accepted a very remunerative and responsible position as superintendent of a farm of several thousand acres near Detroit.

'82.

One of the special attractions at the Ionia fair this year is the school exhibit, under the direction of Commissioner E. A. Murphy, of Ionia county.

L. H. Bailey recently visited the college after having just recovered from a very remarkable surgical operation, the removal of the appendix vermiformis.

Lucius W. Hoyt B. S., LL. B., is associate professor, instructor in the law of contracts, and secretary of the law faculty of the University of Denver, Colo.

W. L. Snyder is still chemist for the Michigan Carbon Works, Detroit.

F. C. Snyder, Greenville, Mich., is on the republican ticket of his county for register of deeds.

E. N. Ball, Hamburg, Mich., has been secretary of the Michigan Merino Sheep Breeders' Association for five years.

L. B. Hall, superintendent of schools at Belding, Mich., writes that he is desirous of spending many months in post graduate study for the degree of M. S. He indicates as his chosen line physics and chemistry.

Lincoln Avery is doubly fortunate. He was married August 23, to Miss Lizzie Northrup, and now has been nominated as prosecuting attorney of St. Clair county. He was the republican nominee two years ago, and although he ran 500 ahead of his ticket, he just went under in the general deluge. The vote then as well as the renomination shows that genuine ability and push are appreciated at Port Huron.

'83.

E. F. Law is the republican candidate for county surveyor of St. Clair county.

A. C. Bird is the happy father of a boy born Sept. 26. Mr. Bird was personal editor of the SPECULUM in '82 and '83.

'84.

Llewellyn Bonham is married and living at Oxford, Ohio.

Chas. McDarmid writes from San Jacinto, California, that it has been a poor season there for the farmers, yet he expects to get about five tons of raisins from a three-year-old vineyard. The weather has been exceedingly warm, in August the thermometer rising to 110° to 115° in the shade during the heat of the day, but with cool evenings as low as 50° or 60°.

'85.

Frank Storrs is married and has two children. He is living at North Muskegon.

W. I. Power is practicing medicine at Philipsburg, Montana. He was married last January to a young lady of that place.

E. A. Bartmess is living in Lowell, Mass. He is chorister of a Baptist church and a professor in an academy. All will be glad to hear that after leaving college he recovered the use of his eyes completely so that he has even left off glasses.

Glenn C. Lawrence is now taking post graduate work in horticulture and botany, while Mrs. Lawrence teaches the "kid academy."

'86.

A. E. Brown is employed in the U. S. post office building at Chicago.

William R. Reumler is in the law business at Unity building, Chicago.

J. E. Hammond of Hillsdale, was on the grounds Sept. 25, the guest of Mr. and Mrs. R. J. Coryelle. Commissioner Hammond will have an educational exhibit, one of the special features, at the Hillsdale fair.

WITH '86.

Prof. W. A. Morse, superintendent of the Au Sable schools, was on the grounds for a few hours October 1. Professor Morse brings three freshmen to the college this year. Who next?

Guy Osborn was married September 14, 1891, to Miss Hermoine Fisher at Elkhart, Indiana. He is now in business at Elkhart.

'87.

Robert W. McCulloch is at Chicago practicing law, with headquarters at the corner of Lake and Clark streets.

Prof. C. E. St. John, of the State Normal School, visited Professors Kedzie and Woodworth September 10th and 11th.

Harvey H. Winder writes renewing his subscription

to the SPECULUM, and says: "I have been successful in making cider a profitable business, while a sugar orchard of 1,000 trees and a farm of 160 acres and not to forget politics complete the year."

'88.

Glenn D. Perrigo of Fort Scott, Kansas, visited friends on the grounds September 10.

H. W. B. Taylor is now living at Oakland, Cal., with his wife and children. He has given up his business in Australia, and expects to remain in this country.

Clark Hubbell of Chevallis, Washington, makes the law his vocation, while as an avocation he finds assay chemistry very lucrative. He says that the course in chemistry that he received at M. A. C. is of more benefit to him than law in the mineral region where he is located.

"The marriage of Dr. Albert E. Bulson, Jr., of this city, to Miss Eva Maud Jeu-Devine of Detroit, occurred at the Detroit home of the bride, 105 East Adams street, last evening. The groom is a very prominent and popular practicing physician of this city. Although he has resided here but a short time he has made many friends who will extend their heartiest congratulations on the event of his marriage to a charming resident of the 'City of Straits.' After making a tour of the west, Dr. Bulson and bride will return to this city to reside permanently."—*Fort Wayne Journal*.

'89.

David Anderson, now a Van Buren lawyer, visited friends at the college September 21.

Will E. Davis goes from Brighton, Mich., to be superintendent of the William, Minnesota, schools. This is a well merited and very decided promotion.

'90.

J. Harris F. Mullett goes to Chicago this fall to take a course in veterinary science at the Chicago Veterinary College.

Chas. E. Ferris, who holds a position in the University of Tennessee, was married at Grand Rapids September 4th.

WITH '90.

E. J. Frost is connected with the Atlas Iron Works at Duluth, Minnesota. Mr. Frost has a good position and gets good pay. He visited his parents and friends in Jackson not long since.

From L. G. Burritt we receive the following sad news: Mr. Florus B. Plimpton of Benton Harbor died September 20th, at the home of his mother, of typhoid fever, after an illness of two weeks. In Mr. Plimpton Benton Harbor loses one of her most esteemed young men; one who, had he lived, would have made the world better for his having lived in it. All that knew him will remember him as a genial, good natured young man, always trying to do right. But he comes not as of old, simply beginning life anew.

'91.

B. A. Holden visited his brothers at the college September 30th.

F. W. Ashton is a junior in the law course at Ann Arbor, and besides this he is taking a special course in constitutional law and political economy.

George A. Waterman assisted Dr. Grange with the veterinary exhibit at the State fair this year, and will attend the Chicago Veterinary College this autumn and winter.

A. T. Sweeney made the college a flying visit while on his way to Columbia College, where he will take a course in law and political science.

WITH '91.

"Broady" Weideman made the college a visit September 25. "Broady" is now a mechanical draftsman for a firm in Detroit.

'92.

H. Arnold White is studying law with Earle and Hyde at Grand Rapids.

J. E. Hinkson has entered the medical department of the University of Michigan.

Frank Bauerle is working with the surveyor of the Illinois Steel Co. at Chicago.

WITH '92.

B. O. Johnson, D. V. S., who graduated at the Chicago Veterinary College, made college friends a visit Oct. 2. Mr. Johnson is practicing at Benton Harbor.

J. E. Brown is taking a course in medicine at the U. of M.

WITH '93.

Walter F. Lyon is taking a special course in chemistry at Ann Arbor.

Fred B. Moore is republican candidate for surveyor of Noble county, Indiana.

Mrs. Ranney returned to Lansing after an absence of ten months at Colorado Springs, leaving her son, Ralph, much improved in health.

Miss Carrie Burnette visited her brother, Professor Burnette, September 28. Wasn't that P. G. (i. e., pretty good).

WITH '94.

Harry C. Buell is at the U. of M., taking a course in mechanical engineering.

COLLEGES AND EXCHANGES.

The *Industrialist*, of the Kansas Agricultural College, has during the past few months printed numerous and valuable articles on the subjects of "Good Roads" and "Wide Wagon Tires." The subjects discussed are of great importance to every farmer and we regret that space will not permit our quoting some of them in full.

The *Printers Ink*, a weekly published at New York in the interest of advertisers, is an exceptionally

valuable publication, and could be read with great profit by all, from the retired merchant to the "devil" in the composing room.

The *Iota Chronicle*, No. 1, Vol. XII, has been received. The *Chronicle* is a quarterly published here by Chapter Iota of the Delta Tau Delta Fraternity, and devoted to college and alumni news.

No. 1, Vol. XII, of the *Normal News*, Ypsilanti, Mich., has come out in its new fall clothes, and is very neat and attractive. As the *Normal* is distinctly a professional school, the *News* has introduced a Professional Department, through the means of which the alumni and professors can communicate the results of their experiences to one another and to the students of that institution. Hereafter the *News* will appear as a semi-monthly.

The *Lyceum*, published monthly by the Young Men's Lyceum at Grand Rapids, is a neat and interesting publication. It contains an excellent article on Truth that might be read with profit.

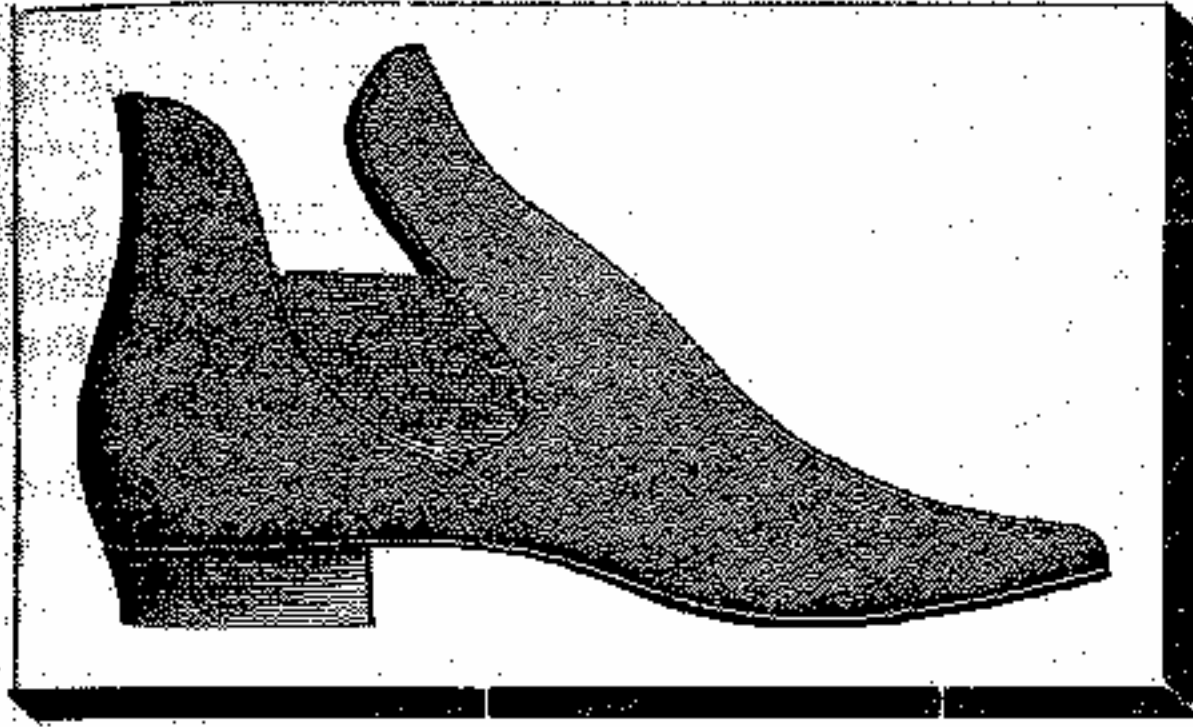
Our Animal Friends, a monthly journal published by the American Society for the Prevention of Cruelty to Animals, has come to the Ex. Ed. table. One cannot read through this publication without becoming impressed with the great and noble object of this society and the immense field for work it has.

We copy the following from the *Gates Student*, Lewiston, Me. "A readable article in the September *Outing* is found in the concluding paper upon the subject 'The Military Schools of the United States,' by Lieut. W. R. Hamilton, U. S. A. He declares that the soldierly spirit that is so characteristic of all boys and especially American boys should be put to some good account. He would have military drill made compulsory in all public schools, the instruction to be under the superintendence of a well trained military officer."

It is stated that a long first joint of the thumb shows will power; a long second joint indicates strong logical or reasoning power; a thick, wide thumb indicates a person of marked individuality, while a broad knot at the end of the thumb is a sure indication of obstinacy. Thumbs up.—*Ex.*

Have you got your SPECULUMS bound yet? If not call for SPECULUM indexes.





SOME FOLKS SAY It's our complete variety; others say it's our low prices; and others the prompt and courteous attention; then again our truthful representation; and once more the correctness with which our salesmen fit the foot (that's where comfort and neatness steps in) that's made our shoe business what it is to-day. All of these are the little drops which help to make the ocean of patronage we are enjoying to-day. Shall we see you soon?

C. D. WOODBURY,

THE "NEW SHOE STORE."

103 Washington Ave. S.

J. J. PROST,
President.

B. F. DAVIS,
Treasurer.

G. W. FREEMAN,
Sec'y and M'gr.

Anderson Road Cart Co.

Manufacturers of Fine

Road, Track and Speed Carts,

LANSING, MICHIGAN.

Windsor Restaurant,

Open day and night.

All game in season.

GROVER E. CHAPMAN, Propr.

FRED W. BERTCH,

Wholesale and retail dealer in Fresh and Salt

MEATS

POULTRY, GAME IN SEASON.

No. 333 Washington Ave. South.

Telephonic Communication.

LION PHARMACY



WM. F. HANSEN,

LARGEST STOCK of	Fine Drugs,
IMPORTED, and	Medicines,
KEY WEST CIGARS,	Pure Chemicals,
CIGARETTES and	Fancy and
FINE TOBACCOS.	Toilet Articles,
	Perfumes.

Next to Postoffice, LANSING, MICH.

VOISELLE & LAROSE,

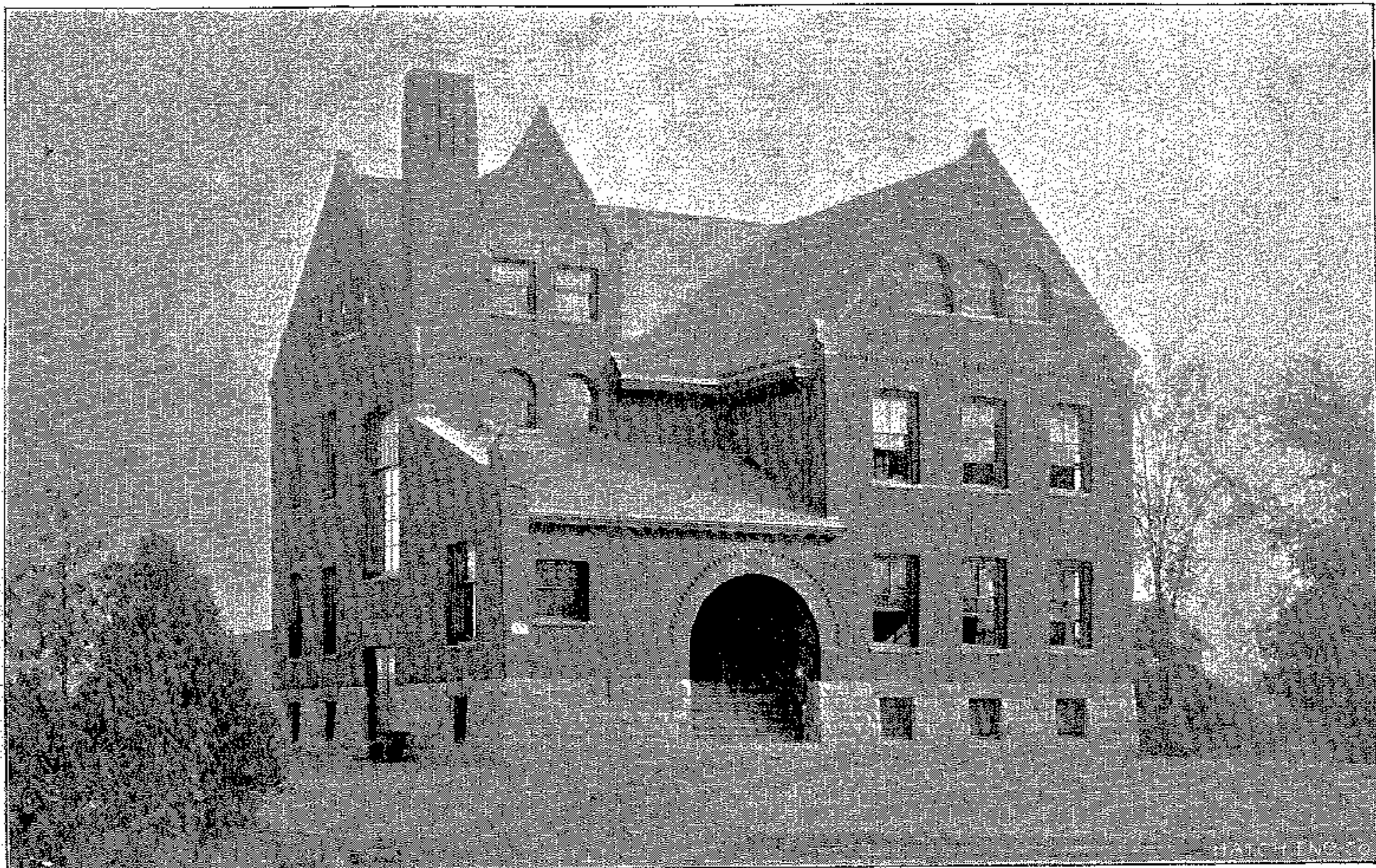
STUDENTS' HEADQUARTERS FOR

Wall Paper and Decorations.

All styles at Rock Bottom Prices.

IN FOOTWEAR

QUALITY IS OF FIRST IMPORTANCE AT SHUBEL'S SHOE STORE, 210 WASHINGTON AVENUE NORTH.



BOTANICAL LABORATORY, MICHIGAN AGRICULTURAL COLLEGE.