

THE SPECULUM.

VOLUME XIII.—No. 1. AGRICULTURAL COLLEGE, MICH., AUG. 7, 1894. WHOLE NO. 79.

College Days.

CLASS OF '68.

Long years ago, dear classmates, we were here,
 When life seemed boundless as the rolling ocean;
 When all we knew and all we thought had cheer,
 We gave a welcome to the world's commotion.
 Firm, as we thought, upon life's threshold standing,
 Like old time sailors putting out to sea,—
 Here we all stood together on the landing,
 Armed with our "sheepskins," fledged for victory.
 Four years had passed and student life was ended;
 New scenes, new trials opened to our view;
 Ideal life with real must be blended,
 And every man must to himself be true.
 Those four eventful years are with us ever,
 Each cherished scene we each of us recall;
 Palsied the hand that would a moment sever
 Such panorama from the life of all.
 The years, now twenty-six, since cold November
 Saw us embark upon the troubled sea
 Are gone, and well do we remember
 How full of promise each one seemed to be.
 O years of hope! when manhood's grand uprising
 Succeeds to youth, and noon succeeds to morning;
 Years in which heads are known to be devising
 A thousand things the path of life adorning.
 O years of toil! O years of victory, blending
 The sweet and bitter in a common cup!
 What lessons rich with real life descending
 Upon our pathways have ye taken up!
 How have ye taught us lessons hard to learn,
 How left us burdens often hard to bear!
 How, like a master resolute and stern,
 Goaded us onward, "still to do and dare!"
 How have ye shown us what it is to be
 Launched on the billows of life's stormy ocean,
 Now on the calm—now on the stormy sea—
 We've learned to swim above the wave's commotion!
 How have ye taught us life as just begun,
 When we were taking exit from the college!
 The real battle yet was to be won,
 Which gives to all life's truest, highest knowledge,
 Out from the land of home, of friends deserted,
 Each to his task an iron will applies,
 Never abashed and never disconcerted,
 "Holds to the mark" or "runs to win the prize!"
 How have ye taught that pride of human station
 Never made men from college halls alone,
 That in all times, in every race and nation,
 He thinks and labors who to fame is known.

Of all these years what memories we cherish;
 How fresh was life, how grand the expectation;
 In memory's casket not a gem can perish
 Through all the years of varied life's duration.
 Eventful years! and what of high endeavor,
 Of grand resolve, since last we met have we,
 Thy sons, old Alma Mater, thine forever,
 Done for the world, and done to honor thee!
 Has fair, proud Science, at whose shrine we're kneeling,
 Found in our efforts fresher life and power?
 What from her store-house have we been revealing,
 What for her glory marks each passing hour!
 Eventful years! O who of us can measure
 The hopes and joys these solemn years contain!
 Where are the sheaves, the harvest store of treasures
 Which years of struggle with the world should gain?
 Where now the pride, the manners of the schools,
 Which marked the student, fresh from college halls,
 The ardor, which advancing knowledge cools
 To solid merit? Let these college walls
 Resound again! and yet again resound!
 With songs of praise! with boyish eloquence!
 Bring back the days when all the varied round
 Of daily duties in the highest sense
 Seemed pleasant tasks! Recall the past!
 And as each well known scene shall pass review
 Dwell on it long, and may its brightness last
 Fresh through the years with every one of you.
 The fields may not be traversed as of yore
 By boyhood's footsteps; but in memory's eye
 Flowers are gathered, insects caught once more
 Upon the lawns and in the fields near by;
 Stars are surveyed with compass and with chain
 And from their spheres brought down to shine on
 paper,
 Would the devout astronomer remain
 Quite undisturbed at such a boyish caper!
 And sweet "Fragaria," bright "Virginiana,"
 The festive board how often have you cheered;
 The wandering tribes of old ne'er tasted manna
 One-half as luscious as you then appeared.
 For round each board were gathered happy hearts
 Poised on the threshold of the future's pleasure;
 Gleams of the sunshine into memory starts
 Which then shone o'er us in the largest measure.
 O we recall! and we shall ever mind them,
 The flowers and fruits the forests used to yield;
 We knew thy sweets, O *Acer Saccharinum*,
 None knew them better! Every fruitful field
 And orchard had some quite attractive feature
 Which to the student offered many charms.
 He finds in science Nature for his teacher,

And with her lessons how his bosom warms.
 We would, O *Pyrus Malus*, thee remember,
 Who sat in silence on our closet shelf;
 Large, round and smooth, and most delicious, tender,
 Ye would tempt Venus 'til she helped herself.
 Eventful years! and o'er the past we wander
 And find ourselves with mast and sail and oar,
 Launching our bark—we think we see it yonder
 Glide down the Cedar, touching at its shore.
 So have we sailed along life's pleasant river
 As down the Cedar on that pleasant day,
 Now touching bank to thank the Gracious Giver
 For blessings he has scattered on our way.
 For, with our ten, though scattered, we've been sailing
 All these long years on rivers never tried;
 Each his own captain over storms prevailing,
 Each with his bark is safe from wind and tide.
 Eventful years! and who has not his share
 Of happy hours! Every day is freighted
 With sunshine such as life has none to spare.
 Long were the days and anxiously we've waited
 For manhood's ripening; but before we know
 Years of the waiting time are gone, to be no more.
 While with regret we see them flying go,
 With joy we now recall the college four,
 With joy the traveler o'er the sandy plains
 Beholds an oasis, and to its shade
 He turns to slake his thirst and soothe his pains.
 So we, until these recollections fade,
 Turn to our college years and live again
 Amid the scenes when life was fair and new,
 And almost feel regret that we are men,
 So fresh this oasis of years to view.
 Who would not toil that such a living green
 Along his pathway ever might be spread!
 A living spring of memories to be seen
 And tasted always! Let it not be said
 That college years are wasted. Never! never!
 And had I but four years of life to spend,
 While life was at its ebb, I would endeavor
 To paint these scenes to gladden being's end.
 There's not a scene, a single recollection
 That I would change, for life was in each one;
 To change one now would be to change complexion
 Of the years—make life another's rather than our
 own.

If there be one, the best among life's treasures
 Given to the student, 'tis the spirit
 Of intellectual growth, of cultured pleasures,
 And who shall say life needs them not to cheer it,
 To till the field and fell the forest well?
 Is there a law of life in Nature's wide domain
 That does not help the husbandman to tell
 Of lofty thoughts, and grandly to explain
 His faith in God? Is there a law of life
 But has its force and being wrought for man?
 The elements of Nature are in strife
 Promoting human comfort. He who can
 May reap rich harvests now of golden grain
 In fields unwrought when we were students here;

And are we marching in the reaper's train,
 And are we fruitful with each passing year?
 As we go forth a reunited band,
 Let not the world have reason to forget
 That we are living! Let a master hand
 Be ours to win the crown of honor yet!
 And as we bid these college halls farewell,
 Let us resolve a grander height to climb.
 Let Science send us forth! And let us swell
 Her grand old chorus, keeping step and time
 With the on-marching, ever "rolling spheres,"
 And live and die an honor to the years.
 Class of 1868. G. F. BEASLEY.

Similitude and Contrast.

BY PROF. A. J. COOK, CLASS OF '62.

I know of nothing that will more surely interest my friends of the east than a word picture of this region and this college, and no better way to paint it than by use of comparison.

Much here at Pomona College recalls very similar experience at old M. A. C. We have here among our students the same eager earnestness, the same ready enthusiasm, the same loyalty that made teaching so delightful at the old college by the Cedar. We have here a capable, hard-working faculty, ever ready to labor and sacrifice for the students and college. M. A. C. was always blessed in like way. We have here a wide awake, able, deeply interested board of trustees, whose hearty belief in and love for Pomona College often takes practical shape, as it did the other day when one of them handed over a check for \$1,000. This, aside from time and money, with no recompense, even expenses, except the knowledge that they are fostering a grand institution. That the Lansing college has been blessed greatly by a like good fortune is generally recognized.

But now as to contrasts. M. A. C. nestles among the beautiful trees, and is compassed round by a lawn of matchless beauty. That lovely park is a great and valuable factor in the education, and an ever pleasant and helpful memory to all the fortunate students who feel the spell of its beauty.

Pomona students are also fortunate; they are ever girt around by the majestic Sierra Nevada Mountains, which on the north are so close at hand, that they seem to hold us in their protecting embrace, to the south we look down upon hundreds of acres of most beautiful orchards, of every kind of fruit, whose rich verdure is never absent. You rejoice in your stone walks and remember the deep mud that did stick closer than a brother. We set foot on granite gravel and ride our wheels every day of the year, and rarely need to wipe off any mud. We never talk about summer dust. I need say nothing of our climate. The bright sunshine, the cool, delightful sea breezes, the dry, wholesome, bracing atmosphere are charming and win praise from everybody. The people combine the moral stamina of New England with the liberal catholicity of the west. They are much like northern Ohio or southern Michigan people. Even many of the largest cities about here never tolerate a saloon. Dr. E. W. Hillgard said to me the other day that in all his observation in Europe and America he knew no country, climate or people that were comparable with those found from Los Angeles to Redlands. They are said to be ideal, and yet he is not of us. Thus the Claremont student will ever carry memories of both majesty and beauty.

In 1861, five years after its inauguration, M. A. C. graduated its first class of seven. Pomona College, six years after its organization, has just graduated eleven students.

At the above mentioned date M. A. C. had 67 students. This year Pomona College has had 190 students. Then M. A. C. had no society room. Now Pomona has as fine a society room as one often sees. All college society meetings are in this room.

Then there was there one boarding and dormitory hall for young men and one college hall. Now we have here one hall—dormitories for young ladies and boarding for all who desire—and one large and very commodious hall for reci-

tations. All young men room, and many board, at private houses. The laboratories and museum here now are greatly superior to those at M. A. C. in 1862. Then all did manual work, as it was required; here many do so as a means to defray expenses. Endeavor is made to obtain work for all who desire it. Here Greek, Latin and the modern languages are thoroughly taught.

I wish a year in Latin, and one each in French and German—better two in German—might at least be made elective at M. A. C. Is it not worth thinking of? In 1861 M. A. C. had a faculty of six. Pomona has ten in her faculty, two of whom are ladies. At M. A. C. the girls are in clover; while here both boys and girls may be said to tread in trifolium, as the sexes are about equally divided. With the street railway will not a like glory rest on M. A. C.? I must say that I think on the whole rather better classroom work is done here than there. This is doubtless due in part to more thorough preparation, to the presence of ladies, and to less manual labor, though in the last society and the student may lose more than is gained. Here all attend chapel and church. I wish the same could be said of our dear college at Lansing. In this we are immeasurably ahead. We have a delightful pastor, and all or nearly all go to church because they like to do so. Each member of our faculty conducts chapel service in turn, which I think an improvement over the M. A. C. method, and I believe the students enjoy the service and are inspired by it to better life and work. The presence of so many beautiful young women and most excellent music also gives added attraction. A very handsome chapel may also aid. On Saturday morning chapel service is conducted wholly or mostly by students, and is much enjoyed. Monday is our holiday. This removes largely the temptation to study Sunday, and has other things to recommend it.

The conservatory of music here is excellent. This gives us superb musical entertainments and charming music for

all occasions. At our late commencement the oratorio of "Creation" by Haydn was beautifully rendered to a large audience which came from miles around, although seats were 50 and 75 cents. Street cars to M. A. C., ladies, and then much and fine music—we pause for a college yell. The rules here are unique, but are they not very sensible and wholesome? They all are recommended and heartily sustained by the college senate, an advisory body consisting of the president of the college and students elected by the several classes. These are some of the rules: Students shall not use tobacco; shall not leave Claremont without permission; shall faithfully keep all study hours, and shall be in their rooms by ten o'clock. This last necessitates early parties, and while M. A. C. students would doubtless feel hampered, yet no doubt most if not all would say, were they to speak their real belief, it were better so. The scholarly habit means work, not social excesses; it means sacrifice, not a frolicsome, go-as-you-please life; it means hard application, not the city indulgence, dissipation. As there are no saloons here, no rules regarding them are needed. Card playing is ruled out. There are no rules regarding dancing, as the sentiment here makes them unnecessary. I do not think the rules are regarded as restraints by any considerable number. The students of Pomona, like those at M. A. C., are loyal to the core, and so are slow to encourage or defend what might ever work harm to their beloved college. The Christian element is so pronounced that any merely private desire takes a back seat if contrary to our traditions, whose fruit all admire.

Best of all here, the college is controlled by the faculty, as any college must be to secure the best results. No one is appointed to a position in the faculty till recommended by this body to the board, and the faculty rarely ever recommend without unanimity of choice. Thus mistakes in appointments are not likely ever to occur. The president in turn repre-

sents the faculty, and does not act independently of them. He rarely advises action that all the faculty does not concur in. He doubts the wisdom of a course approved by a mere majority. He says our action needs—must have—the support begot of hearty conviction. It needs hardly be said, then, that we have harmony. The president of the board said in a joint meeting of the board and faculty the other day: "You are on the ground, you know the needs best. We expect you to manage the college, and we give you hearty assurance that we will stand behind you and ratify your action."

I close with the expression of love and regard for M. A. C. I spent thirty-one delightful years working in it and for it. The friendships formed and the associations there enjoyed will ever be among the rich and inspiring memories and influences of my life. It is a good college and is molding grand lives. To have left such a field of work would have been a source of keen regret were Pomona less than she is.

SCIENTIFIC.

Vitality of Clover Seed.

It is a common belief that the vitality of clover seed is seriously impaired when kept over four or five years. Dr. Beal has been making some experiments, however, which shed new light on this subject, and we quote the following from a lecture to his class in botany:

"In September, 1882, I selected of the second crop of red clover, five plants within ten feet of each other, which seemed to be much alike. The seeds of fifty good heads of each plant were shelled and ever since have been kept, each lot by itself, in a glass bottle. During most of this time the bottles were exposed to the light. On June 7, 1894, nearly twelve years later, fifty seeds of each lot were tested, with the following results:

Of No. 1, 24 germinated.

" 2, 8 "

" 3, 34 "

" 4, 25 "

" 5, 0 "

"On June 23, 1894, another test of fifty seeds of each was made.

Of No. 1, 21 germinated.

" 2, 10 "

" 3, 32 "

" 4, 21 "

" 5, 4 "

"This is an average of 35.8 per cent.

"The seeds were hand-picked and dried.

However, there is some suspicion about the thoroughness of the latter in connection with No. 5, for on examining these seeds they appear quite dull in color and give me the impression that they were placed in the bottle before they were perfectly cured. The bottles were stopped with ordinary corks, were all alike, and when full would hold several ounces. They contained only from 1,260 to 1,820 seeds each."

Still other selections of seeds have been made and are being tested, so that further results may be looked for along this line.

Waste of Manure by Rain.

It is well known that manure exposed to rain, especially under the eaves of the barn, is liable to loss by such washing. The experiment station is conducting an experiment to determine the amount of such loss. Three boxes 3 x 4 feet, lined with tin, and having a spout to deliver into a jug any drippings from excess of moisture, were filled with horse manure of uniform quality on the 29th of June, 1894. The boxes and manure were weighed and provision made for determining loss by keeping and by exposure. Samples of the manure were saved for analysis. The filling of the boxes, weighing, etc., were performed by Mas-selink, Mitchell and Ward of the Junior class.

One box was placed under shelter and protected from rain; one was placed in

open yard, freely exposed to the sky, and one under the eaves of the horse barn. The drippings from the second and third boxes were saved, their amount determined and this dung water analyzed to determine the amount of the three valuable constituents by rain.

From the open yard box eight pounds of dung water of a very dark color were secured after a rain of about three-quarters of an inch. The box under the eaves gave 29½ pounds of drainage.

Analysis of these waters showed that the rain water percolating through the manure in the box in the open yard removed 35 grains of ammonia, 193 grains of potash and 21 grains of phosphoric acid.

The water from the eaves carried out from the manure in that box 70 grains of ammonia, 479 grains of potash and 64 grains of phosphoric acid.

If a single shower removes such an amount of costly fertilizing material from so small amount of manure (about 400 lbs.) the farmer can estimate the loss of a whole season's exposure of the manure piles in his yards, and especially under the eaves of his barn.

R. C. KEDZIE.

The Army Worm.

The northern part of our State has suffered considerably this season from a raid on meadows and grain fields by the army worm. It came too late to do much harm to wheat, rye and barley; but oats, corn and timothy fed the armies wherever found. Potatoes were untouched, peas sown with oats were left while the oats were eaten, and clover in timothy was left. The true army worm seldom, if ever, touches the foliage of trees or shrubs. There are many invasions of insects known as the army worm, but this is the only real army worm, and is known scientifically as *Leucania unipuncta*. It may be recognized by the general dingy black color with the following longitudinal stripes: On the back is a broad dusky stripe with

a narrow white line in the center; below this is a narrow black line, then follows, in the order named, a narrow white line, a yellowish stripe, a faint white line, a dusky stripe, a narrow white line, a yellowish stripe, and an obscure white line; the belly is a dirty green.

The army worms change but little in color through their entire growth. When fully grown they are about one and one-half inches long. They then bury themselves in the ground, when they finish feeding, and a few days later transform in a chrysalis, or pupa. They will remain in this condition until the last of August or first of September, when they will appear as a reddish brown moth, similar to the dingy moths flying around the lights at night. These moths do not feed on the plants, but mate; and a few days later the female will commence laying eggs on the grass in meadows, pastures and especially waste places, such as marshes and "cat holes." The moths soon die. The eggs remain over winter, and the next spring hatch out into small army worms that feed and grow just as their predecessors did.

The army worm caterpillars and moths may be found in limited numbers almost any season, but it is only an occasional season when they march out from their usual feeding ground, the marshes, and strip the surrounding fields of their growing crops. A dry season such as that of last year, is very favorable for them to increase rapidly and soon to spread outside of the marshes or surrounding grass, when tender food becomes scarce. If people with marshes on or near their farms would take the trouble to burn the marshes over at any convenient time through the fall, they would burn most of the eggs, and so prevent what might result in an army worm invasion the next year.

The prospects are that there will be no general invasion next year. There are a great many parasites, such as the "blow flies" and slender bee-like parasites that lay their eggs on the army worms. The egg hatches into a maggot that feeds on

the army worm, destroys it, and later changes into a parasite like its parent. If the parasites have done as good work in all the state as in the regions visited by myself, and we do not have a dry autumn, there will be little danger of an attack next year, as nearly every caterpillar collected has been killed by some parasite.

When an army worm invasion occurs, the best thing that can be done is to trap the caterpillars in ditches. When they start from their breeding ground it is in some certain direction, and few obstructions stop them, or change their course. If they come to a building, they climb up over it, down on the other side, and continue on their journey. If it is a brook, they bridge it with their numbers and pass on, or perish in the attempt. When they come to a ditch, they drop into it and attempt to climb up the other side, but if it is properly constructed, they will keep dropping back because of the loose soil near the top. When the ditch is well covered, kerosene may be poured along in it and ignited, or straw put in the ditch and burned. Another method is to plow or cut another ditch in front of the first ditch, and bury the ones in the first ditch, and so continued ditching ahead of them. When the army is once in a field, little can be done to stop their ravages, except by burning the field or rolling with a heavy roller.

G. C. DAVIS.

Mr. U. P. Hedrick assists us with the following notes:

"Several interesting experiments are being tried in the Horticultural Department with potatoes, about six acres being devoted to this crop alone. One hundred and seventy varieties are being tested to discover their relative merits. Two pounds of seed are planted in twenty-two hills. Notes will be taken upon their growth, and when harvested they will be carefully weighed and accurately described. In a field north of the college extensive fer-

tilizer experiments are being carried on. Three acres of potatoes are divided into seventeen plots, fifteen of which are fertilized with various fertilizers, the other two plots being unfertilized. It is hoped that the comparative value of the various fertilizers can be found. A very thorough trial of different solutions of corrosive sublimate and Bordeaux mixture, as a remedy for potato scab, is being carried on. Seed ends, whole potatoes and pieces were planted, to ascertain the best method of preparing seed."

It has been widely taught that fattening animals are more economically fed in warm stables; that exposure to cold necessitates a greater supply of food to keep up the animal heat of the body. In other words it requires more pounds of dry matter to produce a pound of gain in cold than in warm temperatures. An experiment conducted at this station during the preceding winter seems to indicate that with sheep at least the above is not true. Nine different lots, including one hundred and twenty-five sheep, invariably made greater gains during the colder temperatures, and these gains were produced as the result of a much less consumption of dry matter for each pound of gain. The average temperature of the seven warmest weeks was thirty-four degrees F., and during these weeks it required twelve and eight-tenths pounds of dry matter to produce a pound of gain. The average temperature during the seven coldest weeks was twenty-one degrees F., and it required seven and eight-tenths pounds of dry matter to produce a pound of gain. The whole trend of the experiment seems to indicate that the most economical gains were produced in the coldest temperatures. The experiment seems to show that the importance of very warm shelters has been over-estimated, especially in the case of fattening animals.

F. B. MUNFORD.

The new forge shop, although previously mentioned in these columns, has not been described. As embodying more

thought and care in equipment than smithies usually do, it may be worthy of further mention. The ten forges used in the old shop, although not designed for their present arrangement, were too good to discard, and hence were used together with ten new ones cast from the same pattern by the students. These forges are placed in twos along two lines nine feet from sides of room and twelve feet apart. The anvils are set on oak posts eight by twelve inches by four feet, carefully imbedded in the ground twenty-eight inches. These are arranged conveniently to the forges in four rows of five each, two rows being in the twelve-foot aisle, and one row each in the nine-foot side aisles. Running along under each line of forges, and across one end of the room, forming a U, is an oak trench eighteen inches square and fitted with a cover made in sections, which can be removed when necessary. In this trench are two galvanized iron pipes, one for supplying the blast of air to the forges, and the other for carrying away the smoke from the hoods. These pipes decrease in diameter from one forge to the next, being so proportioned that each forge receives equal blast and equal draft. The blast is supplied by a *Sturtevant* blower and the draft by a *Boston Blower Company's* fan, both of which are placed on a platform high enough not to interfere with the floor space and both driven by a *Case* engine, which is also off the floor, being bolted to the wall. The hoods to catch and conduct the smoke to the underground smoke pipe are of special design and may be likened to large dinner bells with flaring rims tilted to an angle of forty-five degrees, and the tops turning a curve and pointing downward, connected in pairs with the smoke pipe. The smoke after passing through the exhaust fan goes upward through the roof through a galvanized iron pipe. This arrangement gives a room with unobstructed view, as the hoods are quite close to the forge, and enables large pieces of forging to be swung around without impediment. The foreman can

also keep an eye on every man's work from one point of view. The draft is vastly better than with natural draft and the atmosphere of the room is excellent even when the twenty forges are in operation. This arrangement for disposing of the smoke, also lends itself to the utilization of the heat that usually goes to waste through the chimneys of forges, it being obvious that the smoke pipes, were they properly placed and long enough, would warm rooms by radiation. Some experiments to ascertain the amount of heat it is possible to utilize will probably be made in the near future.

P. M. CHAMBERLAIN.

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.

BOARD OF CONTROL.

W. C. BAGLEY, Phi Delta Theta Fraternity,
Editor-in-Chief.

ASSOCIATE EDITORS.

F. L. REYNOLDS, Delta Tau Delta Fraternity.	C. P. CLOSE, Olympic Society.
G. MASSELINK, Union Literary Society.	H. F. LAKE, Hesperian Society.
W. C. STEBBINS, Eclectic Society.	S. H. FULTON, Columbian Society.

M. W. FULTON,	Business Manager.
I. L. SIMMONS,	Asst. Business Manager.
Sec. I. H. BUTTERFIELD,	Treasurer.

AGRICULTURAL COLLEGE, AUG. 7, 1894.

IN assuming control of THE SPECULUM for the coming year the Board of Management fully appreciates the difficult task which lies before it. We have pushed our bark into an untried sea, but we are encouraged by the fact that our ship is a staunch one and that the channel has been well marked by those who have guided the same craft across that sea in

years gone by. Favored by fair winds and good weather, we cannot but hope for a successful voyage. To those who have during the past year held the tiller of THE SPECULUM, we bid God-speed; and surely if they pilot their own fortunes across the sea of life in the same masterly manner that they have guided the course of THE SPECULUM, they will soon reach the shores of success.

WELCOME to the alumni! May the days they spend with us this summer be filled with pleasant recollections and joyous festivities. May the comrades of their student days come back with them and may they enjoy in the grateful shade of the same old trees the renewal of the old friendships. May they sing the same old songs, tell the same old tales and become once more the boys of ten, twenty or thirty years ago.

At the same time that we welcome the alumni we bid farewell to those who for the past four years have worked and played, "bohned" and "scrapped," as the Class of '94. They leave us to enter new fields, to fight new battles and to win new laurels. May those fields be broad, the battles well fought and the laurels replete with fame and honor. May they ever look to M. A. C. as to an early home where they will always be welcome and from which the eyes of friends watch with pardonable pride their march through life.

COMMENCEMENT with its festivities innumerable, with its scores of pretty sisters, cousins and sweethearts, with its ponderous orations and its awe-inspiring sheepskins, is upon us once more. For months we have looked forward with happy anticipation to the pleasures of the great gala week of the college, and now that it has come the only complaint is that it goes so quickly. Let us do all we can to make the last days which '94 will spend among us as full of pleasure as possible, and in the alumni reunion which follows let the old-time spirit of welcome and good cheer prevail.

THE year just over has been so full of changes in the college that it deserves rather more than passing notice. In a material way the college has been perceptibly improved. The new stone walks, the electric lights, the street railway service and the building of the hospital mark a degree of advancement hardly equaled in the history of the college. Numerous applications of the art of landscape gardening have added to the beauty of our campus, and the head of the horticultural department deserves much credit for his efforts in this line. The campus has now the reputation of being one of the most beautiful in the land, and we hope that it will long retain its good name. In the line of equipment much has been done. The enlargement of the library by the building of the north gallery merits attention as a sign of growth.

It is, however, the changes in administration and government that the institution has felt the most. We began the year with a new president, a new secretary, and new men at the heads of three of the most important departments. Besides these, numerous changes have taken place in the ranks of the assistants and instructors and upon the staff of the Experiment Station. Many of the men trained here have been called to other and broader fields, and although the gaps they left were wide ones, they have, in almost every case, been filled creditably.

On the whole the year has been one of progress for the college. Numerous improvements, however, are still possible. There is a certain lack of order among the students, and an incipient tendency to a kind of rowdyism which should be checked. The college is in sad need of some refining influence, and that influence may, THE SPECULUM believes, be best secured by adopting that crying need of the college—a woman's course. The student labor system also, whether resulting in good or in evil, is certainly in need of revision, and the sooner it is done the better it will be for the college.

With the students, also, the past year has been an important one. In athletics

we have perhaps been unfortunate, yet the lesson will be a valuable one in the preparation for future contests. The same may be said of base ball. In the spirit of true athletic training there has been a marked improvement. The criticism that our athletics do not reach those who most need them, is in some degree warranted, and the proposal of the State Board to establish a course of gymnastic training to be required of all is one which should meet with the support of the students. The suggestion of remedying the evil by doing away with inter-collegiate meets deserves some criticism. It is a well-known and well-acknowledged fact that athletic training, to give the highest good, must be imbued by a certain spirit of healthy rivalry—a blending of mind and muscle in one common effort to outstrip the efforts of others. It is only when imbued by such a spirit that athletics become useful; otherwise they are simply mechanical and soon become monotonous, a chore which the sooner it is over the better. Strong bodies and active minds are seldom secured by these means. There is another item which should also be considered in connection with this matter, and that is the advertisement of the college through the influence of these inter-collegiate meets. This has already been demonstrated by the fact that several summer students have been enrolled as a result of the recent field-day at Ypsilanti. With the students, at least, the doing away with field-day can never be recompensed by compulsory athletic training. The loss of a day and a half of college work per year on account of field-day is not comparable to the loss of spirit which would attend its removal.

AMONG the recent developments in society life and society spirit at the college nothing has taken a more decided hold than the society publications. Four of the societies now publish, at more or less regular intervals, small sheets which essay to give in a condensed form the news of the college and the proceedings of the society, together with personal

items from the alumni and some editorial comment. These publications, in so far as they keep the alumni in touch with their societies, in so far as they cater exclusively to the society feeling, cannot be severely criticised. Indeed, in that way they become a direct benefit to all concerned. But it is an undeniable fact that such papers, modest as they now appear, and claiming as they do to be not in the least rivals of any other publication, will, if allowed to grow (and growth is sure to come), greatly decrease the value and efficiency of THE SPECULUM. Rivalry is a healthy stimulus, and competition is the spice of business life, but such stimulus and such spice should not come from within, but from without. When the societies of the college have united to publish THE SPECULUM, when they have absolute control of its affairs and can dictate as to its policy, it seems hardly consistent for them to issue publications which in the end cannot fail to injure or even destroy it. There is room, and to spare, in THE SPECULUM for all matters of interest in the line of college news and alumni personals, and the opinions of the students concerning matters of interest. They are always welcome, and THE SPECULUM, as the organ of the students, is the proper place for their publication. Such matter as the societies do not wish to be made public could be sent out in the form of society annuals or circular letters. Something over a year ago the students became quite incensed over a modest and innocent sheet which appeared every week. Every issue was replete with the news of the week, and was gotten up in a neat and attractive style. As a result it soon became popular, and the cry was raised among the students that it was hurting THE SPECULUM, as it undoubtedly did. Now, however, when very similar sheets are issued by the societies they are fostered by the student body as valuable adjuncts to the college literature. Such action is, to say the least, inconsistent.

Have you climbed the new stairs in the armory?

COLLEGE NEWS.

PROCEEDINGS OF THE BOARD.

The State Board of Agriculture met July 18 and 19. The following extracts from the minutes represent some of the more important business transacted:

JULY 18, 1894.

It was resolved that the secretary notify the Commissioner of the State Land Office to sell the north-west quarter of section 17, town north, range 8 east.

The resignation of R. J. Coryell, assistant in experiment station, was presented and accepted.

It was resolved that Prof. Vedder be sent as a delegate from the college to the meeting of the Society for the Promotion of Engineering Education at New York, Aug. 23, 1894.

It was resolved that Mr. Garfield be a delegate from the board, and Profs. Taft and Davis as delegates from the college to the State Horticultural Society meeting at South Haven, Aug. 21st, 1894.

It was resolved that a sum not to exceed \$150.00 be placed at the disposal of the alumni association for the expenses at the alumni reception, commencement week, 1894.

The sum of \$35.00 was appropriated for music at commencement exercises.

It was resolved that the secretary is hereby requested to report to the board at the next session the aggregate expense of putting in the electric light plant, with an estimate from Prof. Woodworth of how much further expenditure will be required to complete it as intended under resolution of the board.

The following bills were allowed:

Microscopes for zoological department	\$68 00
" " botanical " 	94 00
Storage battery for chemical " 	72 00

It was resolved that the council of the experiment station is hereby requested to hold regular meetings at stated intervals, not less frequently than once each month, and that through the secretary a report of progress and an excerpt of the work accomplished and in course of accomplishment, be reported at each meeting of the State Board of Agriculture.

Resolved, that it is the sense of the board that the arrangements for the commencement is purely a faculty matter, and that they should be settled by that body. That if the faculty of the college desire to present some general plan for future commencements that is an innovation on past methods, the board will be very glad to carefully consider the same and designate its pleasure.

The secretary presented correspondence relating to fertilizer licenses.

Resolved, that the correspondence presented by Secretary Butterfield concerning fees on fertilizers be turned over to the committee on experiment station with the request that after consultation with the chemist of the experiment station, and taking legal counsel, they report back their recommendations to the board.

The chairman of committee on employes recommended that Mr. U. P. Hedrick be assistant in horticulture, experiment station, from July 1st, 1894.

The president was directed to employ an assistant in the greenhouse.

It was resolved that an assistant librarian be appointed at a salary of \$400 a year.

Resolved, that the Faculty Committee on Library is requested to act with the librarian in securing a complete catalogue of all books belonging to the college, wherever they may be located, and that all books in use in the various departments be charged to the

heads of such departments, to the end that in the librarian's books there shall be continuously kept a record of the location of every book that is college property.

The following resolution was offered and adopted:

WHEREAS, the system of college athletics as practiced in our institution does not appear to meet the responsibility placed upon the management of the college to secure for our young men well developed bodies as well as trained minds, because those who are in most need of physical culture are not stimulated under it to enter the training lists; therefore

Resolved, That a committee of the board be raised, of which the president of the college shall be chairman, to report at a further meeting some plan within our means that shall correct, as far as may be, our present weakness in the physical culture of our young men, and which will eliminate from the course of training any inter-collegiate tests during the college terms, but which shall include such courses in gymnastic and athletic games and performances at stated intervals on the college grounds as shall entertain and stimulate to the best exertion and desirable feat of skill.

It was resolved that the agriculturalist of the station be authorized to purchase for distribution, or distribute of the wheat grown upon the farm to farmers of the State at an expense of not to exceed \$150.

A bill for motor to be used in the farm department, of \$200, was ordered approved.

Committee on buildings recommended that stairs for armory be constructed by secretary, not to exceed \$25; adopted.

The resignation of Mr. Groesbeck was received and accepted, to take effect Aug. 1st.

It was resolved that the board rooms in the agricultural laboratory be finished under direction of president and secretary.

It was resolved that Mr. Garfield and the secretary be authorized to fix the prices to inventory of college property.

Adjourned to meet Aug. 8th.

FARM DEPARTMENT NOTES.

The amount of corn injured by frost in No. 13 was about seven acres.

Rosa Bonheur's latest record for one hundred and fifty-seven days is 12,200 pounds of milk and 370 pounds of butter.

This department expects to make an exhibit of live stock at the State Fair at Detroit. They will also fit up a model experimental dairy room where milk will be tested, butter made, and all the latest methods in dairy work amply illustrated.

The new Buckeye self-binder tested on the farm was pronounced a success and the Buckeye Company will build next year's binders after this model. The main improvement consists in not having the upper canvas cover the heads of grain, thereby causing a smaller loss of grain by shelling out.

In oats the hot water treatment for smut was a complete success. All chemical treatments were successful in preventing smut, but they also destroyed a large part of the seed,--in some cases as high as 70 per cent. In sixteen plats, with 41,000 heads of grain, only one smutted head was found.

The hot water treatment for wheat smut is not a

success. The dry hot air test produced no beneficial results. A one-fifth per cent. solution of bi-chromate of potash gave good results, but it is too expensive to make its use practical. The most successful experiment was that in which the seed was treated with lime water.

An interesting test was made with different fertilizers to produce the largest yield of wheat. Among the fertilizers used were sulphate of ammonia, nitrate of soda, hardwood ashes, banner bone, Homestead fertilizer, common salt, gypsum, and barnyard manure. The last named fertilizer gave the largest yield--thirty bushels per acre.

The experiment in feeding *Lathyrus silvestris* to milch cows has been completed. At first the cows appeared not to like it, but after a few days ate it with apparent relish. The new forage plant is equal to green timothy in producing a given amount of milk and butter; however, the butter lacked color and grain, was soft and hard to work.

ECHOES FROM THE BOTANICAL LABORATORY.

About twenty summer students are taking Botany.

In some parts of the State farmers are quite excited at the appearance of a weed which they think is the Russian thistle. Specimens of the plant sent to the college for identification proved to be prickly lettuce.

Dr. Beal has completed the list of under-graduates who attended college between the years of 1857 and 1890. The names, 2,300 in all, are neatly printed on cards. In their letters to the Doctor, many express great interest in the welfare of the college.

L. R. Love has in his herbarium a specimen of timothy with a spike 12½ inches long. Dr. Beal and Prof. Wheeler state that this is the longest timothy spike they ever saw. This specimen grew in the *Lathyrus silvestris* plot, and now the question presents itself, did the *Lathyrus silvestris* influence this wonderful growth?

Many inquiries have been made by students and visitors in regard to the summer house in the wild garden. The purpose of this is to furnish a natural home for mosses and orchids similar to what they have in the natural state in swamps. The plan is to eventually surround the house with arbor vitae trees to prevent the free circulation of air which tends to dry out the soil. At present tent cloth is used for that purpose.

Probably no part of the work required of the agricultural student by the Botanical Department is more interesting and valuable than that which has just been added to the course in the last term of the sophomore year. The work consists in a careful study of the most common weeds and valuable plants known to Michigan, giving special attention to those that are members of the grass family. Perhaps the most pleasing feature is the herbarium of sixty specimens required of each student; many of the students have already exceeded the required number of specimens, thus evincing the

deep interest they have in the work. Probably some of the herbaria will figure at the Farmers' Institutes next winter, and with the intelligent sophomore to explain them they will doubtless be important features.

ABOUT THE CAMPUS.

The new sheds for visitors' horses are in process of erection.

Mr. E. S. Good has been appointed assistant in the postoffice.

The library has a new equipment of chairs, tables and carpets.

The open air concerts given by the college band are highly appreciated.

Mrs. Albright of Chicago is visiting her niece, Mrs. P. M. Chamberlain.

Miss Murray and Miss Smith of Milan are visiting at Professor Babcock's.

The freshman class in elementary physics numbers one hundred and three.

A free phonographic concert is given every morning in the physical laboratory.

Mr. E. G. Harding, a graduate of Cornell, class of '82, is taking a course in horticulture at M. A. C.

Prof. Holdworth's family has gone to Grand Traverse to remain during the hot weather.

Two cast iron targets have been secured, and all students have the privilege of enjoying target practice.

The senior elective studies for next term are botany, agriculture, zoology, veterinary science and English masterpieces.

The street cars continue to do a thriving business, and bring an increased number of visitors to the grounds each week.

The students in laboratory work have connected the physical and mathematical offices by an experimental telephone line.

Tests made by the Mechanical Department show the actual cost of operation of the electric motor on the farm is less than ten cents per hour.

Mrs. Nellie S. Kedzie, professor of hygiene and household economy, at the Kansas Agricultural College, is spending her vacation at Dr. Kedzie's.

It is rumored that the Grand Trunk Railway Co. will put in a side-track at the college lane. Why not have a depot and extend the electric railway to that point?

The Chemical Department has purchased a storage battery of thirty cells. It is now in operation doing electro-chemical work. A new Geisler air pump has also been added to the equipment.

On Wednesday, July 25, the elective junior physics class went with Prof. Woodworth to the ground wire of the street car line at the west entrance, and made a determination of the losses of the current.

About four acres of the campus north of the horti-

cultural laboratory are being prepared for an arbor-etum. In it will be planted specimens of all trees and shrubs native to Michigan.

Prof. Davis expects to attend the American Association for the advancement of science, at Brooklyn, N. Y., during vacation week. He is to have two papers before the entomological section.

Mrs. Wescott, her mother and sisters, were out riding with Mr. Gunson's fractious young horse not long since. For some unknown cause the colt walked into the ditch and dumped the whole party out. No one was hurt.

The Faculty Shakespeare Club meets every Wednesday evening. They have been acting "much ado about nothing," and considerable dramatic talent has been developed. Prof. Holdsworth is a star as Dogberry.

Arrangements have been made by which our commencement visitors will secure reduced railroad rates. All students desiring to spend vacation away from college will receive the benefit of excursion rates on all railroads.

An artillery detachment has been drilling with the field pieces for several weeks. When using base balls for grape shot they can hit the target every time. Perhaps next term we can substitute a cannon in the ball team in place of the regular pitcher.

So much has already been said and written about the freshman and sophomore class scrap of July 16th that we hesitate to mention it. Suffice it to say that the freshmen were victorious. But—who will pay for the hose?

The new SPECULUM Board gave the usual banquet to the old SPECULUM Board, on the evening of July 30th. Toasts were responded to by each member of the old Board and the event was enjoyed by all. The ex-athletic editor "took the cake" as a story teller.

The range of temperature about the college for July has been extreme—from 100 degs. Far. in the shade, to frost point, as shown in the cornfield in No. 13. Such extreme heat has not been felt here since 1868, when for a few minutes before a thunderstorm the temperature 101 degrees was reached.

There are in successful operation on the campus the equivalent of 160 sixteen candle power incandescent lamps, distributed as follows: 15 in Wells hall corridors, 10 in Williams hall, 5 in Abbot hall, 5 at greenhouse, 45 on faculty row, and 30 at the library. The remainder are scattered over the grounds.

On the evening of July 28th a program consisting of recitations and vocal and instrumental music, was given in the Olympic Society rooms by six boys from the Industrial School. The manner in which the selections were rendered showed natural ability on the part of the boys, and thorough training by their instructor in music.

A new scheme is now being tried in the physical lecture room. A plate-glass mirror 3x7 feet has been

placed above the black-board, at such an angle that every student can see the top of the lecture table and all the apparatus. All experiments that have to be performed in a horizontal plan are thus made visible to every student in the class.

We are in receipt of the following announcement:

"MRS. P. B. WOODWORTH,

"A son,

"July 12, 1894."

All are doing well.

President Gorton has succeeded in establishing a new method of conducting entrance examinations for applicants to M. A. C. Printed lists of questions are sent to every county school commissioner in the State. The examination is held during the annual teachers' examination on Aug. 2 and 3. A fee of one dollar is required of each applicant.

A series of press bulletins are being prepared by the experiment station on matters relating to Michigan. These bulletins are sent to all the newspapers of the State with the request that they be published. Thus far three have been issued. The first is on "Doubtful Substitutes for Clover;" second, "Army Worm;" third, "Prickly Lettuce." Number four will be issued soon.

Dr. Grange has used the tuberculine test on 247 cattle of this State suspected of being afflicted with tuberculosis. No reaction of the tuberculine resulted, thus showing that tuberculosis is not as prevalent in Michigan as might be supposed from results of similar experiments in other States. At the request of the State Board of Health Dr. Grange gave an address to the Michigan health officers on "practical results of tuberculine on cattle." This address was given in the Bacteriological laboratory at the University of Michigan.

A press bulletin on the army worm by the entomologist of the station is just out. Many calls for help came from the northern part of the State and Prof. Davis was sent to Gaylord and vicinity to investigate the matter and aid the farmers if he could. Corn and oats were almost ruined in many places and many meadows suffered severely. It was found that the breeding ground of the army worms is in the marshes and "cat holes." Methods of checking invasions and preventing attacks in the future, are given in the bulletin.

At the Students' Organization, Friday, July 27th, the following officers were elected:

President, Royal Fisher; vice president, J. S. Mitchell; secretary, H. W. Hart; treasurer, E. E. Gallup; representative to M. I. A. A., C. H. Alvord; local field day manager, W. A. Anson; base ball manager, Prof. H. K. Vedder; legal board, W. C. Bagley, G. L. Stewart, Clay Tallman, C. P. Close, P. V. Ross, G. J. Baker; auditing board, W. C. Stebbins, E. J. Heck, I. L. Simmons; purchasing committee,

Prof. W. O. Hedrick, J. H. Kimball; bath house steward, C. A. Jewell.

The following is a partial list of the society and fraternity officers for next term. All elections have not yet been held.

Union Literary Society—President, Gerrit Masselink; vice-president, E. D. Partridge; secretary, G. J. Rhodes; treasurer, D. F. Pagelson; marshal, E. A. Robinson.

Olympic Society—President, H. E. Ward; vice-president, C. A. Jewell; secretary, A. R. Rogers; treasurer, I. L. Simmons; marshal, Elwood Shaw.

Hesperian Society—President, H. F. Lake; vice-president, J. S. Mitchell; secretary, J. B. McAllum; treasurer, L. D. Sees; marshal, Fred Barr.

Columbian Society—President, H. R. Parish; vice-president, Frank Johnson; secretary, A. R. Maynard; treasurer, Lee Chapman; marshal, Charles Uhtick.

Phi Delta Theta Fraternity—President, C. H. Alvord; vice-president, B. A. Bowditch; secretary, H. A. Hagadorn; treasurer, C. F. Herrman.

Eclectic Society—President, W. A. Anson; vice-president, F. W. Herbert; secretary, J. F. Merkel; treasurer, H. M. Howe; marshal, W. K. Vanderhoef.

Feronian Society—President, Miss Loa Renner; vice-president, Miss Bertha Wellman; treasurer, Miss Alice Coats; secretary, Miss Mary Baker.

The following orders relative to the new system of appointments in the cadet battalion have been issued.

ORDERS NO. 13

Headquarters Battalion of Cadets,
Michigan Agricultural College, July 9, 1894.

The following regulations relative to the appointment of officers, non-commissioned officers and cadets of the first class are announced to the battalion of cadets:

1. Officers of all grades will be selected for their character, military record, knowledge of drill regulations and general aptitude for position of trust and command. As a rule commissioned officers will be taken from the seniors, sergeants from the juniors, and corporals from the sophomores. These appointments will be made from each class without reference to previous appointments.

2. All appointments shall be revoked to take effect at the close of the graduating exercises each year. The appointments for the following year shall be announced to take effect at the same time. Orders for the above will be published at the last parade of the school year.

3. Cadets with good records will be appointed cadets of the first class under the following conditions: During the last week but one of the summer and spring terms the privates of each company shall be inspected by and drilled before the captains of the other companies in the school of the soldier and company, including the extended order. Those officers

shall recommend for appointment all cadets who make 225 points or more, upon the following basis :

- General appearance and soldierly bearing, - - - - - 25 points.
- Cleanliness of clothing, arms and equipments, - - - - - 25 points.
- Precision in the company drill, - - - - - 100 points.
- Precision in the manual of arms, - - - - - 50 points.
- Precision in extended order drill, - - - - - 100 points.

All cadets so recommended who have not more than three de-merits recorded against them for the term in which the drill takes place shall be appointed cadets of the first class.

4. Appointments for officers of all grades, details for signal and artillery drills, members of the color guard, and all special details shall be taken from this class.

5. Officers and non-commissioned officers who are absent from drill without leave, and who fail to submit satisfactory explanations for the same within the proper time, shall in all cases have their appointments removed.

By order of LIEUT. LEWIS.

COMMENCEMENT NOTES.

Dr. Edwards gave a reception to the seniors on Friday evening, August 3d.

The old plan of having eight commencement orators is somewhat modified this year. There will be three orations by members of the class, and an address by the Rev. C. H. Beale of Boston, Mass.

The following invitation has been sent by the faculty to persons interested in the college :

"The president, in behalf of the board and faculty of the State Agricultural College of Michigan, invites you to attend the exercises of commencement week, August 5th to 11th, 1894."

The final revision of program for commencement week makes the arrangement as follows :

Sunday, Aug. 5.—Baccalaureate address by Pres. Gorton, at 2 p. m.

Monday, Aug. 6.—Class day exercises at 8 p. m.

Wednesday, Aug. 8.—President's reception, 8 to 10 p. m.

Thursday, Aug. 9.—Dress parade by cadet corps and review by Gov. Rich and staff at 3 p. m.

Reunion of college societies at 8 p. m.

Friday, Aug. 10.—Commencement exercises at 10 a. m. Commencement and alumni dinner at 1 p. m. Public exercises of the alumni association triennial reunion at 8 p. m.

Saturday, Aug. 11.—Triennial business meeting of the alumni association at 9 a. m.

In addition to the above the seniors will fish at Pine Lake, Saturday, Aug. 4, and hold a hop in the armory Tuesday, Aug. 7, hence the week will be entirely taken up by festivities.

We present here the society reunion programs:

Ecleritic Society.

- President's address, - - - - - M. Carney
- Oration, - - - - - E. J. Heck
- Prophecy, - - - - - J. R. Petley

- Poem, - - - - - F. W. Lewis
- Story, - - - - - R. L. Clute
- Society paper, - - - - - W. A. Ansonge
- Toast master, L. A. Wilson.

Olympic Society.

- President's address, - - - - - J. P. Churchill
- History, - - - - - H. R. Smith
- Oration, - - - - - C. A. Jewell
- Prophecy, - - - - - V. V. Newell
- Poem, - - - - - C. P. Close
- Society paper, - - - - - C. C. Pashby
- Toast master, F. M. Nichols.

Union Literary Society.

- President's address, - - - - - C. J. Foreman
- Oration, - - - - - Gernt Masselink
- Poem, - - - - - D. J. Nies
- Prophecy, - - - - - Clay Tallman
- Society paper, - - - - - Thorn Smith
- Toast master, D. D. McArthur.

Hesperian Society.

- President's address, - - - - - C. J. Barnum
- History, - - - - - L. B. Plummer
- Solo, - - - - - M. G. Kains
- Poem, - - - - - C. B. Smith
- Oration, - - - - - W. F. Wight
- Prophecy, - - - - - E. V. Johnston
- Song, - - - - - Quartet
- Toast master, C. B. Smith.

PERSONALS.

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

PROGRAM FOR ALUMNI REUNION.

General Information.

Headquarters—Physical Laboratory. Call as soon as you arrive, pay the fee, one dollar, and get your badge. This will insure your getting reduced rates on the street car and at the hotels in town.

Order of Exercises.

- Thursday, August 10. Alumni and Commencement Dinner, 1 o'clock P. M., College Hall.
- Business Meeting, 3 o'clock P. M., Chemical Lecture room.
- Literary Program, 8 o'clock P. M., Armory.

PROGRAM OF LITERARY EXERCISES.

- Music.
- Prayer.
- Music.
- Address by President of Alumni Association, Daniel Strange, '67.
- Music.
- History, Osmond C. Howe, '83.
- Music.
- Oration, Clarence E. Smith, '84.
- Music.
- Poem, Herbert W. Collingwood, '83.

'62.

E. M. Preston, President of the Preston School of Industry, of Ione, California, expresses his sincere regret for not being able to revisit M. A. C. on the occasion of the approaching reunion.

'68.

A. G. Gulley, connected with the Experiment Station at Burlington, Vermont, has accepted a call from the Storrs Agricultural College of Connecticut, as professor of horticulture. He will assume the duties of his position on August 15.

'69.

James Satterlee writes: "I regret exceedingly not to be able to attend alumni meeting this year. I have arranged to make a collecting tour for D. M. Ferry & Co. which will take me into western Pennsylvania and West Virginia for the next four months."

WITH '74.

George C. Higbee is an official stenographer at Court House, Marquette, Mich.

WITH '76.

Dr. F. H. Bangs is the owner and operator of a large private sanitarium at San Jose, California.

'77.

Dr. Mason W. Gray of Pontiac, Mich., will attend the reunion.

'78.

Prof. James Troop and family, of Purdue University, are spending the summer vacation at Livonia Station, New York.

Eugene Gregory will respond to a toast at the alumni dinner.

A bulletin on the dairy industry of Denmark, published by the Department of Agriculture at Washington, is the work of Charles C. Georgison.

WITH '78.

Cass E. Harrington practiced law at Pontiac, Mich., till 1889. He served two terms as circuit court commissioner of Oakland county, and was State representative from that district in 1887. In January, of '89, he moved to Denver, Colorado, where he is at present engaged in an extensive law business.

'79.

Jay Sessions of Maple Rapids writes that he and his wife will be present at the alumni meeting.

WITH '80.

Ira T. Sayer is a prominent lawyer at Flushing, Mich., and a member of the industrial school board.

'82.

G. W. Thompson is clerk of the circuit and superior courts of Douglas county, Wisconsin.

WITH '82.

George E. Lawson is still holding down his old position as cashier of the People's Savings Bank at Detroit, Mich.

'83.

H. A. Danville has been engaged for the third year

as teacher in the Filer City Schools. He is a delegate from Manistee to the Republican State convention at Grand Rapids.

A. C. Bird has been recommended by the faculty for the degree of Master of Agriculture.

WITH '84.

R. C. Williams, for six years treasurer of Baraga county, is at present dealing in timber and mineral lands at L'Anse, Mich.

M. A. Jones is travelling for a drug company.

Carl English has patented an electrical governor for water wheels.

'85.

J. W. Matthews, for several years a teacher in the Grand Rapids High School, has accepted a position in the Wisconsin State Normal at Plattville as Professor of Science.—*Union Lit.*

Prof. J. D. Towar, of Kingston, Rhode Island, will be included among the expected visitors during alumni week.

WITH '85.

L. H. Harrison is manager of the Allegan Electric Light Company, at Allegan, Mich.

'86.

A new boarder has arrived at Prof. P. B. Woodworth's in the person of a promising boy, born July 12.

J. S. Hammond was a delegate to the republican convention held at Grand Rapids.

J. B. Cotton is doing a thriving law business at Duluth, Minn.

'87.

Captain I. B. Bates is in the auditor general's office at Lansing. He and his wife are living in new and elegant flats on Shiawassee street.

H. R. Case is located at Sioux City, Iowa. He will spend the summer months at Port Austin, Mich., visiting with his people.

E. A. Burnett, of Walkerville, Ontario, will attend the alumni reunion.

W. C. Samson is a successful farmer near Richmond, Va.

WITH '87.

Herbert L. Hutchinson is a fruit grower near Lansing, Michigan.

William K. Clute is diligently devoting himself to the pursuit of legal work and study at Ionia, Mich.

'88.

W. A. Taylor writes: "Having wrestled for one year with 'Eds.,' 'Ads.' and 'Subs.,' I know the amount of labor required to keep THE SPECULUM going and prize each number received. May she never grow less."

We are sorry to learn that L. H. Dewey is afraid to trust his neck to railroads sufficiently long to attend the reunion. He has given up grasses and is now paying his attention to weeds.

Dr. N. S. Mayo and his wife, Mary (Carpenter) Mayo, accompanied by Prof. L. G. Carpenter, '76, and Mrs. Mary (Merrill) Carpenter, class of '81, are sum-
miting the Rocky Mountains.

WITH '88.

Henry J. De Gamo is a breeder of polled shorthorn cattle and oxford down sheep at Highland, Mich.

'89.

E. G. Lodeman, assistant in horticulture at Cornell University, has gone to Europe for the purpose of studying the diseases of the grape.

Will o' Wisp is the name of a piece of art which B. K. Canfield has on exhibition in the Paris Salon. The privilege of exhibiting work in this building is considered a great honor in Paris. Only works of great merit are allowed a space in the Salon.

The home of B. K. Bentley has been blessed with a son born July 12.

W. J. Myers is studying political economy and sociology at the Chicago University. He will visit his "Alma Mater" Aug. 9.

WITH '89.

E. L. Bullen is a dealer in merchandise and produce at North Aurelius, Mich. He expects to enter the U. of M. Law Department next fall.

J. M. Axford, after having taken a full course in a business college, secured the position of chief clerk in a large dry goods store at Chattanooga, Tenn.

'91.

Victor Lowe has accepted a position as entomologist at Geneva, N. Y., at a salary of \$1,000.

E. P. Safford, Arthur Kneen and George Watter-
son will favor the college with a visit during com-
mencement.

'92.

W. D. Groesbeck has secured a place in the U. S. Patent Office at Washington, D. C., at a salary of \$1,200.

G. W. Davis is working on a farm near Tekonsha, Mich. As an avocation he is doing excellent work in botany.

Dor W. Stowell, Albert H. Gillett, H. N. Peck and D. W. Trine will attend the alumni reunion.—*Hesperian Star*.

WITH '92.

Gage Christopher has finished his second year as book-keeper in the People's Savings Bank at North Lansing, Mich.

W. J. Merritt is at the college taking special work in chemistry.

'93.

Unless weather and girls interfere, J. E. Dimmick will meet the "old boys" during commencement time.

Benjamin Bain has accepted a situation with the Russell Engine Co., of Massillon, O.

J. F. Wight is applying the principles of agriculture as learned at M. A. C. to 120 acres of Allegan county soil.

H. H. Merriman graduated from the Kentucky School of Medicine in June.—*Hesperian Star*.

L. H. Baker has finished a successful year as assistant in the Galesburg high school. He will return to the same position next year.

WITH '94.

E. R. Pierce paid the college a pleasant visit July 20th. He is staying at home this summer and takes practical lessons in "the science that fosters the art that feeds the race."

M. W. Stutz has been teaching school and farming since he left college. He expects to return and finish with '96.

WITH '95.

S. B. Young will resume his work at the college next year.

WITH '96.

Mr. Joseph Beaswain, of Charlevoix, Mich., and Miss Carrie Chandler, of Manistee, were united in marriage at the home of the brides's parents on July 14. THE SPECULUM extends congratulations.

COLLEGES AND EXCHANGES.

Many of the college papers for June and July contain interesting accounts of commencement.

The college yell is a purely American invention and is unknown to other countries.—*The Ossarist*.

There is nothing which has more influence over the actions and college work of a student than the relations existing between him and the different teachers of the institution.—*Mephistophelean*.

There are fifty boys and young men who are now preparing to speak at commencement, ten preps, ten freshmen, ten sophis, ten juniors and ten seniors. To one of each of these tens will be given a gold medal.—*Alamo and San Jacinto Monthly*.

The faculty of Hillsdale college have promulgated a remarkable order. The students who enter college single cannot get married during their course and remain in college. People already married, however, are not barred.—*Ex*.

The Industrialist, of the Kansas Agricultural College, for June 30, gives interesting statistics on the occupations of the graduates. Of the 238 male graduates, 34 are farmers. School teaching occupies the attention of the largest number at any one occupation, 41 being engaged in that line of work. The remainder find employment in over 30 different occupations. School teaching seems to be also a favorite line of work with the women, as 32 out of the 120 graduates follow this occupation.



THE ONLY →

Photo Supplies

DEPOT IN CENTRAL MICHIGAN.

The choicest selection in PERFUMES, TOILET ARTICLES and general drug line in Lansing.

We buy and sell more goods than any other drug firm in the city.

TRAT THOMPSON

THE PROGRESSIVE DRUGGIST.

117 Michigan Ave. E.



STUDENTS . . .

Will find the largest stock of Carpets, Curtains, Blankets, Bed Spreads, Ready-made Sheets and Pillow Cases and all House-furnishing Goods, at

BURNHAM & CO.'S.

Prices always the cheapest.

104 — Washington Avenue North — 104

DAVIS & CO.

The One Price Clothiers and Furnishers.

— WE ARE AGENTS FOR THE —

Celebrated Perfect-Fitting KING PANT.

Come and see our 50c Sweater.

104 — Washington Avenue North — 104

RIVERSIDE GREENHOUSES, - LANSING, MICH.

SOLES FOR SALE.

SOME made thin and light, for ease and comfort; others medium weight and heavy as the occasion demands,—*all attached to uppers* of as good materials as are known to the modern art of shoe making; some of fine *Kangaroo*; many of the popular *French patent calf stock*; others of *Russia leather* in tan color and black, made up in pretty styles, serviceable and long wearing.

Have added to our already popular **M. A. C. line** a new shoe known as the *Needle Point*, or the *late razor toe style*; somewhat lighter stock and finer finish than usual, with *Goodyear welt soles*, which are identical with hand-sewed shoes. We offer these at \$3.50 per pair.

Thanking you for your liberal patronage, we wish you a pleasant vacation and will be pleased to see you all next term.

103 WASHINGTON AVE. SOUTH.

C. D. WOODBURY.

Photographs

Of every description and of the finest quality are made by...

S. & E. SHARPSTEEN
Photographers,

Corner Wash. and Mich. Aves. (Successors to Cassey & Co.)

We are always ready to make views or groups.
No poor work allowed to leave our gallery.

PHOTOS ON YOUR WATCH,
Photos on Porcelain, Silk or Linen.
Special rates to M. A. C. people.

FOR

- | | |
|---|--|
| Base Balls,
Tennis Balls,
Bats,
Rackets,
Running Shoes, | Duck Trousers,
Blazers,
Swaters,
Supporters,
Tennis Shoes, |
|---|--|

Or anything in the athletic line, go to

JAS. R. PETLEY, Outfitter.
Agent A. G. Spalding & Bros.

Base and Tennis Balls Always on Hand.

"FARMING CORPORATIONS,"

A system of business farming, is a book farmers ought to have and gladly buy.
STUDENTS can make money selling it.

Write to W. ALDRICH & Co.,
120 Broadway, New York City.

Hasty's Gem Lunch

..... 117 Washington Ave. South.

LEADING LUNCH COUNTER

IN THE CITY.

Good COFFEE, OYSTERS, PIE, SOUP, Etc.

Open until midnight.

NORTHWESTERN UNIVERSITY

MEDICAL SCHOOL,

(CHICAGO MEDICAL COLLEGE)

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

Offers a carefully graded course of four years. Graduates in the University courses, which are specially preparatory to the study of medicine, take advanced standing.

The new separate buildings for laboratory and clinical work, and additions to Mercy Hospital, very greatly increase the teaching facilities of the College.

For circulars of information address the secretary,

DR. FRANK BILLINGS,

235 State St., Chicago.

College of Physicians and Surgeons,

Opposite Cook County Hospital, Chicago, Ill.

The Winter term begins September, 1894, and ends April, 1895. Total fees, \$105 each Winter term, and a laboratory deposit, which is returnable. Four annual graded courses, with advanced standing for graduates in pharmacy and university preparatory courses prior to the study of medicine. Clinical and laboratory facilities unsurpassed. For annual circular of information apply to

W. E. QUINE, M. D.,

Pres. of the Faculty,

813 W. Harrison St., Chicago.

PATENTS

Procured in the U. S. and all foreign countries upon the most reasonable terms, trade-marks, copyrights and labels registered and patent business of every

description promptly and skillfully attended to. 25 years experience. We report whether invention is patentable or not free of charge. Our fee not due until patent is allowed. 32-page book free.

H. B. WILLSON & Co., Patent Lawyers,
Washington, D. C.

THE NAME TO REMEMBER

when buying a

BICYCLE

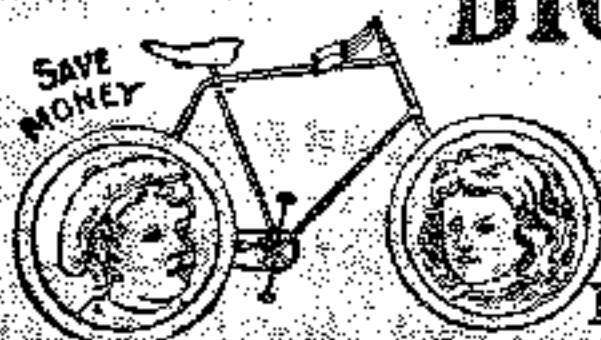
-is-

A. W. GUMP
& CO.,

Dayton, Ohio.

\$30.00 to \$50.00 saved on many new and second-hand Bicycles. Lists free. Over 2,000 in stock. Cash or time.

AGENTS WANTED.



STUDENTS

We would be pleased to show you our Fall and Winter

Tailor Made Suits

OVERCOATS, HATS, CAPS,
SHIRTS, COLLARS,
TIES, SOCKS, JEWELRY.

H. KOSITCHEK & BROS.,

The Reliable Clothiers.

O. N. STONE & CO.,

THE

LEADING

GROCERS

Are headquarters for Staple and Fancy Groceries and Provisions. Fruits and vegetables in their season. Choice Butter and Fresh Eggs always on hand. Give us a call.

319 WASHINGTON AVE., NORTH.

JOSEPH R. LAROSE,

STUDENTS' HEADQUARTERS FOR

Wall Paper and Decorations.

All styles at Rock Bottom Prices.

LOUIS BECK,

The Clothier

HATS, CAPS,
and
GENTS' FURNISHING
GOODS,

A Specialty.

HEADQUARTERS

For FINE

CLOTHING.

Students and Others, Give us a Call.

112 Washington Avenue North.

In Footwear

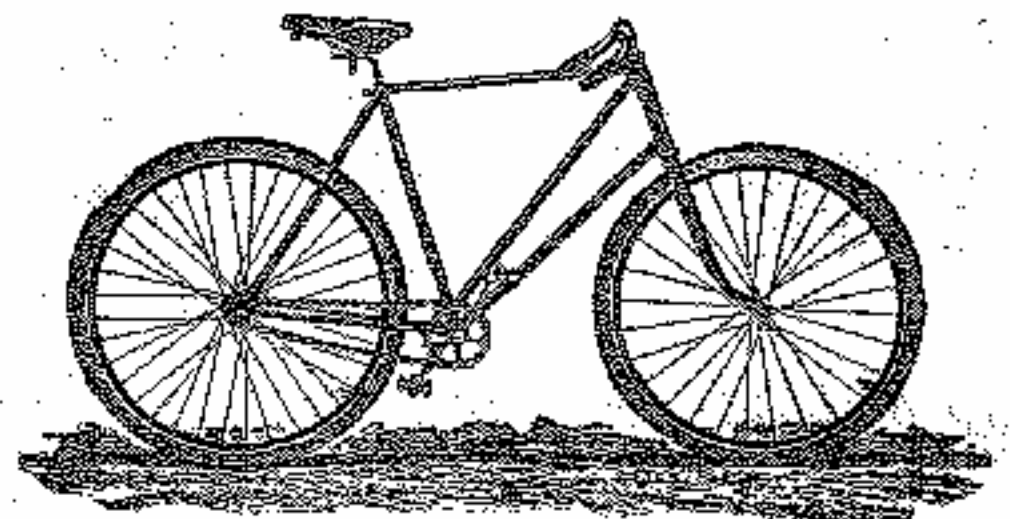
SEE

SHUBEL,

210 North Washington Avenue.

WE carry only celebrated manufactures that are thoroughly reliable, and we guarantee every pair sold. W. L. Douglas' \$3 and \$2 shoes are the best in the world for the money. Call and look them over.

J. H. LARRABEE, ... BICYCLE CRANK



Boys, call and see what I have to sell or let me fix up your wheel . . . 119 MICHIGAN AVE. WEST, (opposite P. O.)

M. J. & B. M. BUCK.

HEADQUARTERS
FOR

Furniture Rooms.

STUDENTS'
SUPPLIES.

Wire Springs at	\$2.00
Coil Springs at	1.50
Canvas Cots at	1.50
Wire Cots at	2.00 and upwards.
Chairs at	.50 and upwards.
Rockers at	.75 and upwards.
Mattresses at	1.50 and upwards.
Tables at	1.00 and upwards.

ALL GOODS DELIVERED AT THE COLLEGE FREE.

FERREY & BUTTS,

Furniture and Undertaking.

We will make
Our prices
Satisfactory.



225 and 227 Washington Avenue South,

LANSING.

H. H. LARNED,

—DEALER IN—

Crockery and China.

Special attention given to obtaining
the best styles of lamps.

105 Washington Avenue South,

LANSING, MICH.

You will find the Largest Assortment of

Fine Boots & Shoes

AT

H. A. WOODWORTH'S

115 N. Washington Ave.

Repairing

Neatly

Done.



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.

Opera House Block. Sanborn & Co.

W. H. PORTER,

First-class Livery and Hack Stables.

Cor. Capitol Ave. and Washtenaw St.

Telephone No. 65.

RIVERSIDE GREENHOUSES,

LANSING, MICH.

About Advertisements.

FELLOW STUDENTS, now, as in the past, let us patronize those who patronize us. Let men who appreciate the value of our trade enough to advertise with us have our patronage. Merchants, Physicians, Publishing Houses, Business Colleges, Musical Academies, School Boards, Teachers' Co-operative Associations, and all Employment Bureaus, Barbers, Livery-men and Hotel Proprietors—all should send in their ads. to the SPECULUM. If you do not believe it, try us and be convinced.

Sweaters . . .

All colors, qualities and prices.

Headquarters for

Mackintoshes

Of all kinds.

Would like to sell you your

Spring Hat.

Students' patronage respectfully solicited.

ELGIN MIFFLIN.

RENSSELAER POLYTECHNIC INSTITUTE,

TROY, NEW YORK.

A SCHOOL OF ENGINEERING. ESTABLISHED 1824.

Local examinations for entrance provided for. Send for a catalogue to the Director.

CHAS. A. PIELLA, - FINE LINE OF - Diamonds, Watches, Clocks

Repairing of Fine Watches and Jewelry
a specialty.

Jewelry, Silverware and Optical Goods on hand.

. Lansing, Mich.

PARMELEE & JESSOP, FINE SHOES AND RUBBER GOODS

HOLLISTER BLOCK.

SPECIAL RATES TO COLLEGE STUDENTS.

COLLEGE BOYS

Make A. M. Emery's Book Store your headquarters while you "wait for the wagon."

College Text Books and Stationery,
Gold Pens,
Wirt's Fountain Pens,
Picture Frames and Wall Paper
constantly on hand.
Reduced Rates to Students.

A Large Stock of
Miscellaneous Books, Albums,
Paintings and Engravings.
*Prof. MacEwan's \$100 Library
in Stock.*

113 Michigan Ave. **A. M. EMERY.**

C. W. JACKSON, THE M. A. C. BARBER

All kinds of work done in this line at the shop.

Razors honed.

Shaving Soap for sale.

ROOM 46, WILLIAMS HALL. Hours after May 1st, 9 a. m. until 7 p. m.

← Our motto is to try and please all.

F. M. PRAY, R. D., Glasses Carefully and Accurately EYE SPECIALIST. Fitted.

OFFICE IN HOLLISTER BLOCK,

HOURS—9 to 12 A. M., and 1:30 to 5 P. M.

LANSING, MICH.

RIVERSIDE GREENHOUSES, — LANSING, MICH.

Hasty's Gem Lunch

..... 117 Washington Ave. South.

LEADING LUNCH COUNTER

IN THE CITY.

Good COFFEE, OYSTERS, PIE, SOUP, Etc.

Open until midnight.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL,

(CHICAGO MEDICAL COLLEGE)

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

Offers a carefully graded course of four years. Graduates in the University courses, which are specially preparatory to the study of medicine, take advanced standing.

The new separate buildings for laboratory and clinical work, and additions to Mercy Hospital, very greatly increase the teaching facilities of the College.

For circulars of information address the secretary,

DR. FRANK BILLINGS,

235 State St., Chicago.

College of Physicians and Surgeons,

Opposite Cook County Hospital, Chicago, Ill.

The Winter term begins September, 1894, and ends April, 1895. Total fees, \$105 each Winter term; and a laboratory deposit, which is returnable. Four annual graded courses, with advanced standing for graduates in pharmacy and university preparatory courses prior to the study of medicine. Clinical and laboratory facilities unsurpassed. For annual circular of information apply to

W. E. QUINE, M. D.,
Pres. of the Faculty,
813 W. Harrison St., Chicago.

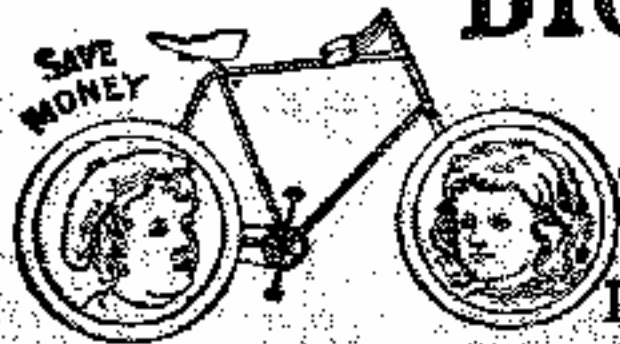
PATENTS

Procured in the U. S. and all foreign countries upon the most reasonable terms; trade-marks, copyrights and labels registered and patent business of every

description promptly and skillfully attended to; 25 years experience. We report whether invention is patentable or not free of charge. Our fee not due until patent is allowed. 32-page book free. H. B. WILLSON & Co., Patent Lawyers,

Washington, D. C.

THE NAME TO REMEMBER
when buying a **BICYCLE**



—IS—
A. W. GUMP & CO.,
Dayton, Ohio.

\$30.00 to \$50.00 saved on many new and second-hand Bicycles. Lists free. Over 2,000 in stock. Cash or time. AGENTS WANTED.

STUDENTS

We would be pleased to show you our Fall and Winter

Tailor Made Suits

OVERCOATS, HATS, CAPS,
SHIRTS, COLLARS,
TIES, SOCKS, JEWELRY.

H. KOSITCHEK & BROS.,

The Reliable Clothiers.

O. N. STONE & CO.,

THE

LEADING

GROCERS

Are headquarters for Staple and Fancy Groceries and Provisions. Fruits and vegetables in their season. Choice Butter and Fresh Eggs always on hand. Give us a call.

319 WASHINGTON AVE., NORTH.

C. J. HARRIS,

Fresh, Salt
and Smoked

MEATS

Wholesale and retail.

The largest and best market in the city.

We will not be undersold.

TELEPHONE

The College Yell

Is no louder than the praises lavished on the Perfumes and Toilet Articles we are selling at prices which make them no longer a luxury, they are so cheap.

We are headquarters for everything in the DRUG line in Lansing.

E. Alsdorf & Son
The Druggists.

Capital City Dye Works

106 Washlenaw Street West.

Ladies' and Gents' Garments
Cleaned and Dyed in the
Best Style.

Kid Gloves Cleaned and Dyed.
Ostrich Feathers Dyed.

French Dye Cleaning
a Specialty.

All orders promptly attended to.

A. G. BISHOP, Prop'r.



Merely to Announce

That we WANT the College trade,
and will give all there is in it FOR IT.
"We've got the Goods," with the
Style, Fit, and Price—Right.

PARK SHOE HOUSE,

J. A. Park.
Dean Park.

107 Wash. Ave. N.

WELLS & MORGAN

Offer nearly every day special bargains in **Watches, Jewelry and Novelties.**

In these goods they are able to give their customers the advantages of the latest styles at wholesale prices.

In the art of WATCH REPAIRING we have no superiors.

WELLS & MORGAN.

STUDENTS KNOW THE VALUE OF **PURE CHEMICALS** AND THE SAME RULE HOLDS GOOD WITH **PURE DRUGS**

When you want the latest novelties in reading matter, or the finest quality of pure drugs and chemicals in your prescriptions, call on . . .

235 WASHINGTON AVE. SOUTH.

F. B. RAYNALE, PH. C.

N. M. REDHEAD,

Dealer in all kinds of

Fresh and Salt Meats

ALSO

Game in Season.

Special attention given to getting the best meats.

North Lansing, Mich.

Lansing Steam Dye Works,

110 Grand St. N., LANSING, MICH.

The New French Cleaning Process. Ladies' and Gents' garments of all kinds cleaned, or dyed all the Newest Colors and finished equal to new. First class tailor for repairing.

L. MACDONALD, Propr.

SEVERANCE BROS.,

BAKERY,

RESTAURANT,

CONFECTIONERY.

OYSTERS

AND

ICE CREAM.

226 Washington Avenue South.

LANSING, MICH.

BARBER SHOP

AND BATH ROOMS.

No 209 Washington avenue, one door north of Hudson House,
Lansing, Mich.

J.W. CAREY, Propr.

JOHN HERRMANN,

TAILOR,

218 WASHINGTON AVE. N.

RIVERSIDE GREENHOUSES, - LANSING, MICH.