

THE SPECULUM.

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AGRICULTURAL COLLEGE, MICH., JULY 10, 1891.

WHOLE No. 54.

The Benefits of the Agricultural College to the Farmers.

EX-GOV. C. G. LUCE.

The world moves, and the forces that control its movements are constantly changing. We are now only emerging from the long period of force and military power, where powder, shot and shell have been the controlling factors in the settlement of disputed questions. Now thoughts, ideas and universal education are more and more recognized as the safe and sure foundations upon which society must rely for safety, permanency and prosperity. But the onward march of civilization, in its progress, is much like the marching of a mighty army to conflict and victory. With the bravest of men and the ablest and most skillful of commanders, there are retreats and many counter-marches. And again, the successful commander of men will see as he enters upon a life and death struggle that his most important points in the line of battle are well fortified, guarded and protected. He will also see that there are no gaps or weak places in the whole line of battle where the enemy can break through and thereby throw the whole army into confusion. In the fierce competition and peaceful conflicts between the great nations of the earth it has been demonstrated that strength was found in education and increased knowledge. England discovered this at the Paris exposition, where she found that she was being distanced on many of her own chosen fields. A commission was appointed to discover the cause. They soon learned that Germany, France, Holland and others were doing more for the education of the masses of their people than England was, and that they were thus ena-

bled to gain upon, if not pass them, in the race. English statesmen, having discovered the cause, hesitated not to apply the remedy, and such a cry for the schoolmaster went forth as was never heard in old England before. The teachers responded to the call, the people assented, and all rejoice. But your readers may well ask what this bit of history has to do with agricultural colleges or agricultural education. Along through the ages colleges for the education and equipment of students for all of what are known as the learned professions have existed. For this purpose they have been regarded as a necessity for centuries. Theological seminaries, medical colleges and law schools dot the world and the nation over. They are established and maintained without stint or objection. But some years ago it was made apparent to some of the captains of our civilization that the one weak point in our line of march was the crying want of agricultural education. And this weak point in the line of battle was found to be occupying the most important position on the whole line, and this fact increased the desire of those who realized and appreciated the truth to fortify and strengthen the vital points. No English statesman or philanthropist was ever more anxious to build up and regain this lost ground than were these men. For this purpose, and through these influences, the agricultural college was called into existence. For this reason the legislature was commanded by the constitution of this State to "As soon as possible provide for the establishment of an agricultural school." In obedience to this provision, and in harmony with a growing, although far from a unanimous, public sentiment, our Agricultural College commenced its official life. It was

just as certain then as now that our civilization could not march successfully on to the mighty achievements within its reach with its center weak because not fortified by proper and especial education, as it is that no general can fight battles successfully with his most vital point exposed. All farmers ought to see—but some do not—what England's statesmen saw at the Paris show: what we need is the schoolmaster to teach in our line. That our colleges have not accomplished all that we fondly hoped is true. Enterprises, and especially new ones, seldom do. Mistakes have been made; but in this respect they do not stand alone. But even this should not discourage or cause us to slacken our efforts; but it should stimulate us to renewed efforts to avoid them in the future. We should counsel, advise, and command, if necessary, in order to remedy mistakes. The Board at our college has been almost universally composed of practical working farmers, imbued with an earnest desire to strengthen and broaden the dwellers in the rural homes. But we are sometimes doubtfully asked: "What have the colleges done for agriculture, anyway?" I might, Yankee fashion, answer the question by asking another: "What have all of our common schools and colleges done for the people, anyway?" Sit down and compute it in dollars and cents if you can. And this is what is implied when the question in relation to agricultural colleges is asked. And yet the schools furnish the bulwark of our advanced and advancing civilization. These are the foundations upon which the whole structure rests. They furnish a sure guarantee for the perpetuity of our institutions. But they are much older than agricultural colleges, and before objectors ask us to make out an itemized account of the financial benefits derived from the latter, will they please make an effort to do the same for the former? Other colleges had plans to model after—established precedents to guide them; not so with the agricultural colleges. Ours

was a pioneer of its kind. It had to feel its way along; it had to learn as it went. Opinions differed in regard to its scope and work. Some of us thought that it should be more experimental from the start. But with all of these embarrassing features to overcome, and with all of the conflicts of opinion to contend with, a good, and in some respects a great, work has been accomplished. And this work would not and probably could not have been done elsewhere as well. The crowning feature of the plan adopted and the policy pursued is that which requires *all* students to labor. Please remember that the agricultural college lives, moves, and has its being for the purpose of building up this important branch of the public service. We are a great army, marching on to victory if all are kept in line. But if agriculture, which contributes the most by far in men and means, is permitted to lag and weaken, occupying the center, as it does, the whole army is in peril. Farming implies toil and labor. Every effort should be made to render these honorable. This is just what the agricultural college does. I believe that no faithful student ever left the M. A. C., after taking a four years' course, without feeling a downright respect for labor. No matter what pursuit he may follow, the honor and respect for labor have become a part of him. This he can not escape if he would, and would not if he could. This is at least one point gained. And another akin to this is found when the student goes out and locates on the farm. The education received, not only along the line of his chosen occupation, but in other directions, gives him a vantage ground by using the well-drilled brain to guide the hand more skilfully in the performance of its tasks. And again the information garnered by president and professors and disseminated at the annual series of institutes held in different parts of the State not only adds to the general fund of knowledge by imparting ascertained facts, but this stimulates thought and inquiry

in the minds of others. There is yet a vast unexplored field for research and investigation before all the facts connected with the earth's production are understood and utilized to the best advantage. The colleges are now constituted experimental stations, and as such are to act an important part in discovering long hidden facts. Indeed, so important has this work seemed to me that I was for many years inclined to think it should have first received attention. There are so many things we want to know and *ought* to know, and do not know, in the conduct of our farms, that some of us at times become impatient. But with a clearer perception of the work assumed, I am now satisfied that it was commenced at the right end of the line. Truths are developed so slowly by experiments that if this had been the chief work we should have given up in despair long ago. They are too slow and expensive for individual enterprise. Indeed, nothing less than the government itself can undertake such work. But by concert of action between colleges, and by a careful and wise expenditure of the funds, great results must crown the efforts now being made; and when these results shall have been realized, as they must surely be, agricultural colleges will rise up and stand ahead of the oldest and best colleges in the land. We must remember that other colleges have been educating professors for generations; agricultural colleges had theirs to discover and then to educate to a proper performance of their duties. No man has more difficult tasks to perform or problems to solve than the professor of agriculture. To find one we have to experiment. No other way to secure one, especially as experience has not fully determined just what we want. The Board always requires wisdom in the determination of what is wanted, and then comes the *who*. The people all need faith, hope and patience.

The South spent \$5,000,000 for educational purposes in 1880, and \$21,000,000 in 1888.

The Navy—Old and New.

L. C. BROOKS, UNION LITERARY SOCIETY.

In 1814, a most ingenious and enterprising citizen of the United States, to whom the world is indebted for the general adoption, though not for the original application, of the power of steam to the propelling of boats, conceived that the same power might be employed to move a floating battery, carrying heavy guns, for the protection of the Atlantic frontier of our Republic. The plan was submitted by Robert Fulton to the American Executive. Congress, influenced by the most liberal and patriotic spirit, appropriated money for the experiment, and the navy department appointed commissioners to superintend the construction of a convenient vessel, under the direction of Mr. Fulton, for making the experiment. On the twentieth of October, 1814, the vessel was launched at New York, amidst the plaudits of a vast crowd of citizens, and in a very short time after her equipment was completed. The machines in weight and size surpassed anything of the kind ever before seen in America. The vessel presented a structure resting upon two boats, and keels separated from end to end by a canal fifteen feet wide, and one hundred and fifty-six feet long. One boat contained the cauldrons of copper to prepare the steam, the vast cylinder of iron, with piston, lever and wheels, occupied a part of its fellow, and the great water-wheel revolved in the space between them. The main or gun deck supported her armament, and was protected by a bulwark of solid timber nearly five feet thick. This was pierced with thirty port holes to enable as many thirty-two pounders to fire red-hot balls. Her upper or spar-deck was plain, and she was to be propelled by her enginery alone.

At length, all matters were ready for a trial of the machinery which was to urge this bulky affair through the water. This

was accomplished June 1, 1815. She proved herself capable of opposing the wind, and stemming the tide, of crossing currents, and of being steered among vessels riding at anchor, though the weather was boisterous, and the water rough. Her performance demonstrated that the project was successful; no doubt remained that a floating battery, composed of heavy artillery, could be moved by steam. It was universally agreed that we possessed a new ally against every maritime invader. The city of New York was considered as having the means of rendering itself invincible. The Delaware, the Chesapeake, Long Island Sound, and every other bay and harbor in the Nation could be protected by the same tremendous power.

But the days of the old wooden walls are over. The Monitor absolutely revolutionized naval architecture so far as concerned war vessels, and the good work progresses. Providing the expectations of our capable Secretary of the Navy are fulfilled, some time in 1893 we may have a fleet of twenty battle ships, with coast defenders, cruisers, and torpedo boats in suitable proportions for efficient defense, and an establishment in such working order as to administrative machinery, officers, men, reserves, and vessels, that it can be brought without delay into effective action.

A navy being a fighting force, and being required for that purpose only, we must have ships that can both attack and defend, and the modern battle ship is the representative of this class.

The three that are now being built, the "Indiana" and "Massachusetts," at Cramp and Sons' yard, Philadelphia, and the "Oregon" at the Union Iron Works, San Francisco, each with a displacement of 10,000 tons and a cost of over \$3,000,000, are expected to be the equals, if not the superiors, of any similar vessels afloat.

A model, which to all appearance will be identical with these battle-ships, will be presented to us at the Columbian Expositi-

tion, as an object lesson, with the hopes that the prairie people will take an interest in the navy when they see what one of her ships of war is like and will not in future begrudge \$3,000,000 for one ship. The model ship will be 348 feet in length and 69 feet in width. There will be mounted 50 guns of all calibres, from the great thirteen inch monster, that carries a projectile weighing 1,100 pounds, to the one-pounder, rapid-fire gun and the Gatling. Everything appertaining to the fully equipped battle-ship will be seen in its proper place. Turrets, torpedo-boats, anchors, chain cables, davits, awnings, deck fittings, and the appliances for working all of these things will be shown. The thirteen-inch guns, of which there are four, will be models, as the real gun and carriage weighs more than one hundred tons, and would require a building of great strength for support. The superstructure will show the cabins, state-rooms, mess-rooms, tables for the crew and other fittings. There will be exhibited on the berth-deck the machinery by which the ship will be operated, charts and instruments of navigation, ordnance implements, samples of provisions, clothing, etc. There will also be portraits of naval heroes from the time of Paul Jones to Farragut, Foote, and Porter, and the costumes of the navy from 1774 to the present time will be worn by the attendants. Officers and marines will be detailed to illustrate the discipline and mode of life on ship-board. Even the sailor of the future must be trained to duties that he used to know nothing about. The change in the character of the ordnance on the ship calls for a new drill.

There is no longer necessary much knowledge of the wind and its moods, so far as the wind is considered as a propelling power. It will not have to be considered when the time comes for getting under way, and battles will be fought between great fleets without its treacherous aid. Students of naval tactics will no longer find it neces-

sary to study modes of attack from the windward and leeward, or the effect of shifting winds during engagements, or the relative values of wind in fights between single ships and between fleets.

The coming sailor must be more of a soldier, more of a machinist, more of a mathematician, though he may not be so familiar with the masthead as is the picturesque old salt with rings in his ears and curls on his shoulders. He must have a spring in his step and a snap in his eye. He must know more about a dynamo than about blocks and sheets and spars. To secure for these new ships a force of men who will represent the brains, the ambition, the courage, and the patriotism of the American people as well as these ships represent the American mechanical genius, is the most important task to which the Secretary of the Navy has addressed himself.

That an American navy worthy of the American people will be built need no longer be questioned, for both political parties are now committed to such a policy, while a beginning has already been made that must excite the hearty approval of every one who becomes familiar with the subject.

How We Talk.

C. R. WINEGAR, OLYMPIC SOCIETY.

The art of talking should and does imply thinking; yet as one listens to the gibbering of his fellows in a crowd, the momentary chats at "hops" and receptions, or even our every day table-talk, he must be convinced that nothing is more foreign to such conversation than thought. By the word thought in this connection, however, is not meant the same stern, formal action of the brain that gets a geometry lesson, but the use of that faculty to judge of the propriety of what to say and when to say it.

Some people seem to think it their duty on meeting you to keep up an incessant

talking whether they say anything or not, in which case you are said to have been entertained. Oftentimes this same class of talkers will span over a beautiful space of silence, which they seem to abhor as nature does a vacuum, by filling it with a miscellaneous accumulation of words.

On the other hand there are those who do not feel quite sure what would please their listeners, and hesitate to speak first; they are slow to form acquaintances, but acquaintances once formed are lasting. For this class of talkers there is every hope, not only of their becoming fluent talkers, but entertainers as well.

The habit of thoughtless talking is a bad one and hard to overcome, for like other bad habits it has its fascinations. Why, what can be more pleasant than chatting for hours at a time without a "horrid" thought to bother you? All common sense is sacrificed for merriment, and the talker for a time yields to its soothing influence, as does the smoker to his pipe. Such a form of conversation can only live in its own company, and this from its very nature, will not be of a high order.

The evils of this light talking are at once manifest. It steals from the indulger much valuable time; it litters the mind with trash, which eventually crowds out the better thoughts, and leaves one an easy victim to inferior companionship.

We see this loose talking, as it is sometimes called, cropping out in society, at public gatherings, and even in colleges; wherever there is a crowd to fan it into life; for folly will not thrive alone.

One phase of this habit presents itself in the form of a continued repetition of some phrase or word, which starts from some place, nobody knows where, and spreads with lightning rapidity over the country. This rages for a season or until some original thinker starts another. If you don't believe "we are in it" just keep your ears open for a little while. This little phrase

seems to have effectually driven "rats" from the scene of action in search of "chestnuts," which are not an average crop this year. Fortunately one has to be a little choicer of his language at present or the ever ready, "you make me tired," will put an end to the conversation.

To the moderately original punster we would give all due praise. It is only those that treasure up and make collections of these trivial sayings, and then deal them out in a haphazard manner, that deserve to be criticized, in fact it is always the memorizer that does the least thinking.

Then there is the formal talker, who has a little speech for particular occasions and on such occasions always delivers that little speech. Such people need our tenderest sympathy, for their friends are few. A sympathy must exist between speaker and listener before a conversation can be carried on successfully. But few talkers can hold the attention and entertain all classes of people, because of the difference in human nature and human thought; this, however, is the ideal toward which all should aim.

It is useless to talk at random or on a subject that interests yourself alone, thinking of course your companion will be interested also. It is necessary to catch the eye, to at least assure yourself that your listener is not asleep, to listen to his own talk and by so doing discover his peculiarities and in what he is interested; after all this has been determined you may find that you can please him best by leaving him to his own thoughts. "What a man wants to do," says O. W. Holmes, "in talking to a stranger, is to get and to give as much of the best and most real life that belongs to the two talkers as the time will let him."

Talk is a serious thing, though all talk should not be serious. It is the great indication of character; one does not choose his friends for their beauty or style of dress, but rather the choice is made through mutual sympathies, expressed by speech. How

necessary then in talking, which is but the expressing of our thoughts, that thought not only accompany our remarks, but that it be of the best quality we are capable of making it. If the old adage, think twice before you speak, is too strong, it will still serve you well if the dose is reduced one-half:

Take it at meal-time or wherever you go,
It will help you in talking with friend or with foe.
Your old chums may leave you, but what do you
care,
For their talk without thinking was too much to
bear.

SCIENTIFIC.

Influence of the Geology of a Region upon its Agriculture.—II.

In mountainous districts the farming is necessarily of the rudest sort, and is largely confined to grazing. The very lay of the land compels it. It is here that the farmer "looks up the chimney to see if the cows are coming home." Consider in this connection the mountain farming of North Carolina or the mountain dairying of Switzerland.

The plains are capable of the highest possible development if the soil be suitable, and they are generally of the best. Study the "Black soils" of Russia, the plains of Hungary or the prairies of our own West. River valleys or the dry beds of fresh water seas of all lands are the most fertile, being a mixture of rocks, not the pulverized remains of any single formation, and almost anything that is suited to the climate thrives well on these mixed soils.

Soils from pulverized sand rock, whether on the coast or left as drift, seem suitable with proper moisture for fruits and coniferous trees, but fail utterly with the grains and succeed only very moderately with the forage grasses. See the sands of New Jersey and the Atlantic coast as well as those of our own North.

With a fair degree of fertility these sands

are the most famous potato regions of the world through perhaps not yet able to yield the grains. See again our own northern Michigan.

The "wheat lands" are decidedly calcareous, or rest upon a bed of limestone. Not that large crops of wheat are not raised upon the rich alluvial soils, but the grain is darker in color and less even in berry. See the difference between the wheat from our own "openings" and from the "timber lands." While the former excels in wheat it is decidedly second in oats, and neither crop will thrive upon the muck where the peppermint is in its glory.

Indian corn perhaps thrives upon a greater variety of soils than any other crop; still it evinces a decided preference for alluvial soils, as well as does tobacco. Cotton thrives upon a variety of soils, but the Sea Island only upon the richest.

Kentucky blue grass, though the cosmopolite among grasses, still decidedly prefers a soil resting upon a bed of limestone, agreeing with wheat in this particular, and makes but a sorry success upon sand. Red clover is said to fail utterly on the soils of the South that contain iron.

Sugar-bearing plants yield a lower per cent of sweet when grown on low dark soils, and in case of the maple the product is decidedly darker in color.

Fibrous plants depend for a good fibre upon a proper soil and none of them so far as I know will succeed upon one that is poor.

Oats, though gross feeders, require strong soils, while rye is far less particular.

A slight difference in soil makes all the difference between success or failure, and these differences may be found exceedingly close together. It is the hammock lands somewhat above the general level of the sandy plain that constitutes the orange lands of Florida and is characterized by a constituent of broken shells, resembling though in slight degree the shell lime and sand deposits

which when quarried and allowed to dry and harden make the famous coquina stone of the early Spanish Americans.

In our own North, the hills with a slight admixture of gravel are, strangely, better soils than the sandy plains between, unless they rest at a slight depth upon a bed of marl.

Examples might be multiplied indefinitely, all tending to show that all crops have their preferences for particular soils; that some succeed only upon those of certain character, and that the nature of the rock from which a given soil has been formed will largely decide the capacity of that soil to yield agricultural crops; in other words, that the geology of a soil cannot be safely ignored, but is a rough and ready means of judging of its possibilities.

Cross at right angles a mountain chain, or any of our great glacial moraines of the North, and note the sudden and absolute changes to be recognized on every hand, following in every case the well defined differences in soils. The writer knows one farm whose boundary upon the northeast is a glacial moraine affording a stone fence some four feet high, or rather deep, for it is several rods in width, while the field itself is entirely free from stone.

Sudden changes are always confined of course to regions of tilted strata or of glacial moraines, but the pronounced characteristics of large areas, depending upon the character of their underlying rock, or the nature of the drift, courts study, and the time will come when more attention will be given to the natural constitution of our soils.

EUGENE DAVENPORT.

Natural History Society.

Regular meeting of the Natural History Society, June 12, 1891.

The meeting was called to order by President V. H. Lowe. C. F. Baker presented an article on a few of the phases of cell division, touching more especially on the

division of the chromatin band in the nucleus. R. B. Pickett then presented the following article on

FOXES.

Subdivision in the classification of animals is carried to a much greater extent than in that of plants. While in botany the terms order and family are almost synonymous, in zoölogy there is a great difference in their meaning. The orders in the animal kingdom are always divided into super-families, and these sub-divided into families. In cases where Providence has not constructed the animals so that they may be divided and sub-divided into groups enough, a single group is given two or three of the "uncivilized" names, so that the regularity of the classification may not be impaired. For example the dogs, wolves, foxes and a few other animals, from their resemblances to each other must be classified in the same group. They all belong to the order *Carnivora*. But they differ so much from all other animals of this order that they cannot be included under another group as a subdivision, so they must be ranked as a main division of the order, and as such are given the super-family name of *Cynoidea*. As this super-family cannot be divided into more than one family it is given a family name of *Canidæ*. The two principal genera of this family are *vulpes* or foxes, and *canis* which includes wolves, dogs, jackals, etc. The *vulpes* includes seventeen species which are distributed throughout all the continents except South America and Australia. In this country we have the common red fox, *vulpes fulvus* or *vulpes vulgaris pennsylvanicus*, and the gray fox, *vulpes virginianus*, while a third, found in the Rocky Mountain region, has been named the Large Prairie Fox, yet it is thought to be but a variety of the common species. The gray fox was formerly quite numerous in the timbered portions of eastern United States. In Washington's time it was this fox that the Virginia gentlemen chose to hunt in preference to the

smaller red fox whose deeper cunning made it more difficult to catch, and whose fur was less valued. But at present it is not found in the settled parts of the country. A few specimens remain in secluded parts of the Appalachian mountains. The rest have retreated West and North before civilization which destroyed the timber and its means of sustenance. While the gray fox receded before civilization, the red fox has advanced with it. The reason given for the extinction of the gray fox is that it did not dig its own burrow, but depended upon natural caves, or burrows of animals. And when the forests were destroyed and the country settled, sufficiently secluded places could not be found for it to rear its young. Another reason is that it did not possess the cunning strategic faculty of escaping the hunter that the red fox does. Our red fox resembles very closely the English fox, and in cunning and strategy certainly ranks as high. It is with this one that this paper has to do, not so much from a scientific standpoint as an object of game, and as the ordinary people, if I may use the term, know him.

Red foxes are, at present, quite numerous in even the the thickly settled farming regions in the southern, as well as in the northern part of this State. I have no doubt that if there is a person living in this vicinity that is addicted to fox-hunting, and is posted in the art, he could tell us of the locality of one or more dens within a radius of two or three miles of this place.

A specimen of *vulpes fulvus* (red fox) from the college museum was exhibited, and the rest of the article consisted of an explanation of a map illustrating several fox-hunts that were made during the three previous winters, in the northwestern part of Jackson county.

Mr. G. C. Davis gave an account of some experiments with insecticides, conducted by him at South Haven. He also made some remarks in regard to the insect fauna of

that place. Large numbers of insects, especially Coleoptera, were found on the shore of the lake, where they had been washed up by the waves. Many of these undoubtedly drifted up from Northern Illinois.

C. F. BAKER, Secretary.

THE SPECULUM.

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AGRICULTURAL COLLEGE, JULY 10, 1891.

THE value of good lectures is unquestioned, and yet the benefits do not seem to be appreciated by some. If there is an admission fee to such entertainments the chapel is far from crowded; if none, perhaps a somewhat larger attendance may be observed. Of course we do not mean to say that there is a general want of support to the lecturers who address us, but only that some of the students, and others, who could just as well attend, do not do so, and thus show a lack of interest in and appreciation of advantages.

It is to be hoped that in the future first-class lecturers can secure large audiences, so that the occasional engagement of such men can be justified.

WHILE it is very gratifying to the friends of the college that so many of our young alumni are taking high positions in similar institutions, it can not be denied that the policy of "professor-culture" is one not always conducive to the best interests of our own college. It tends to produce soil-exhaustion unless the crop can be retained on the farm. No sooner is a man trained into a valuable assistant to a professor than an attractive call takes him away. Then the process is repeated. When a department gets hold of an able man as an assistant, it should possess money enough to retain him for a term of years. We now have a few instances of this, and in every case we believe the efficiency of the department is greatly augmented.

RETROSPECTION is the employment of old age, and is not for the young man. And yet, as the years march by in quick succession until a long-expected occasion approaches, none can avoid the reflective mood. Especially is this true of him about to leave his Alma Mater, bearing with him the seal of his full adoption as one of her honored children. There comes to such a one a vivid recollection of those first few days on the campus, when took place the change from what might appropriately be termed the larval period of boyhood, into the cocoon of collegiate life; and within these walls, during four years, has a further wonderful process of transformation been carried on, until now he is about to break forth fully developed, and only at the present moment entirely ready to begin his true life. Very likely memory is caught in a series of more wonderful capers. It pulls down the "stack" in one's own room, and builds another in that of a fellow; it succeeds, without much effort, in catching a large, able-bodied

COLLEGE NEWS.

"duck;" it visits the fruit garden at unseasonable hours; it looks with present nonchalance upon the once fearful specimens of "goose-eggs," and is in general very erratic. Yet it takes occasion, before it ceases its wanderings, to peep into the old familiar "box;" affectionately grasps the friendly hand of "pard;" seeks the kindly society hall; wanders by moonlight under the arms of the great oaks. Ah, these college days! When shall we see their like again? May the joy of the recent past inspire us for the sterner future.

As it is customary at this time for "ye editors" to bid their friends farewell, so must we take leave of our SPECULUM readers in the conventional manner. But not alone from a sense of propriety would we do this. It would indeed be sad for us to leave, without a word of parting, a task so thoroughly enjoyable as ours has been; a real acquaintance so cordial as has grown up between the editors and the genial persons known by the general term of "readers," an object so living and personal as THE SPECULUM has become to us. So a few words with you all and we will leave you.

We believed the established policy of THE SPECULUM to be sound, and consequently have endeavored to carry into our work the same principles of kindly criticism, fairness, and common sense that have imbued our predecessors. We have never had great aspirations to pose as radicals in our conduct of the paper. And so, if it can be said that we have not suffered THE SPECULUM to relapse into any less degree of vigor and of worth than it has possessed heretofore, we shall feel that our labor has not been in vain.

And now we bid THE SPECULUM and its readers farewell. As the years roll on, and other men take up the work, you may forget us and what we have tried to do for you. We can never forget you and the wonderful help you have been to us.

A special number of the SPECULUM will probably be published about commencement time. It will contain portraits and sketches of the Faculty and various scenes on the campus, together with other interesting matter.

Miss Goodwin is visiting at the college.

Senators Taylor and Toan visited the college June 25.

Secretary Reynolds is enjoying a four weeks' rest.

Professor Edwards has been granted the degree of LL. D.

The seniors have decided to have a class day and no lecture.

L. C. Gibbs enjoyed a visit from his father a few days since.

Mr. and Mrs. Pattison recently spent a day with their son.

Miss Latson, of the Lansing Blind School, is one of our summer students.

Mrs. C. J. Monroe, of South Haven, visited her son, George, the last of June.

L. A. Clinton was at the Harrison Experiment Station, June 18 and 19.

C. F. Baker is assisting Prof. Cook in the Entomological Department.

A. B. Chase entertained his mother and sister at the college for a few days last week.

Dr. Scott, President of the Ohio State University, was at the college a few days since.

Prof. McFarland, of Olivet College, lectured in the college chapel Friday evening, July 3.

Our campus has been the rendezvous for several picnic parties during the past few weeks.

President Clute gave an address at the closing exercises of the Blind School, Tuesday, June 23.

The Botanical Club spent Saturday, June 27, at Grand Ledge. Some rare plants were obtained.

Mr. C. H. Clute and family of New York recently spent a few days with their cousin, President Clute.

Mr. Goodenough takes Professor Colburn's class in mechanics, and Mr. Hillyer his mechanical drawing class.

Prof. Vandevort's lecture on "Five weeks on the Continent" was listened to with much interest and pleasure.

The senior class was agreeably entertained by the Feronians, at Dr. Beal's, on the evening of June 11, and by Dr. and Mrs. Durand, Friday evening, June 19.

Professor Meyers left for the State Agricultural College of Colorado, June 22. Mr. Babcock will have charge of Professor Meyers's classes in geometry during the summer season.

At the regular hour for Sunday morning chapel, 8:30 A. M., beginning June 28, will be given a series of half-hour talks by the following professors: Dr. Durand, Dr. Kedzie, Professor Cook, Dr. Edwards, Dr. Beal.

The lecture delivered in chapel, Friday evening, June 26, by Rev. D. M. Fiske, of Jackson, was enjoyed by all present. His subject, "Wanted, By the Twentieth Century, A Man," was one which would naturally excite interest. As treated by the speaker it was practical and pleasing.

Sir John Bennet Lawes, of Rothamstead, England, has presented the college library nine valuable volumes which contain the results of the experiments carried on at the Rothamstead Farm for many successive years.

The following is a copy of the bill relating to the college appropriation as finally passed by the Legislature:

SECTION 1. *The People of the State of Michigan enact,* That there shall be and is hereby appropriated out of the State Treasury, four thousand five hundred dollars for the rebuilding of the greenhouse; seven hundred dollars for heating the south half of College hall; five hundred dollars for heating of the horticultural laboratory; seven hundred and fifty dollars for permanent heating apparatus; twenty-one hundred dollars for the farm department; fifteen hundred dollars for the mechanical department; five hundred and seventy dollars for the horticultural department; five hundred and thirty dollars for the greenhouse; five hundred dollars for the botanical department; one hundred dollars for the veterinary department; five hundred dollars for the chemical department; five hundred dollars for the physical department; seven hundred dollars for the zoological department; two thousand forty-five dollars for the steam works department; two hundred dollars for the mathematical and engineering department; one hundred and fifty dollars for the English department; five hundred dollars for the military department; two thousand dollars for the library; two hundred and fifty dollars for the drafting department; seven thousand eight hundred dollars for the repair of buildings, steam and water works; eight thousand dollars for student labor; fifteen hundred dollars for farmers' institutes; ten thousand dollars to replace botanical laboratory; a total of forty-five thousand eight hundred and ninety-five dollars, of which one half shall be paid in the year one thousand eight hundred and ninety-one, and one-half in the year one thousand eight hundred and ninety-two, which said moneys provided for in this act, or so much thereof as may be necessary, shall be expended under the direction of the State Board of Agriculture for the purposes aforesaid, and shall be drawn from the treasury on presentation of the proper certificate of said board to the Auditor General and on his warrants to the State Treasurer.

SEC. 2. There shall be assessed upon the taxable property of the State in the year one thousand eight

hundred and ninety-one the sum of twenty-two thousand nine hundred and forty-seven dollars and fifty cents, and in the year one thousand eight hundred and ninety-two the sum of twenty-two thousand nine hundred and forty-seven dollars and fifty cents, to be assessed and levied in like manner as other taxes are assessed, levied and paid, which tax when collected shall be credited to the general fund to reimburse the same for the sums to be drawn therefrom as provided for in this act.

Hon. Henry Chamberlain, of Grand Rapids, will be gratefully remembered by friends of the college for his efforts in behalf of the college bill. The delay in its passage will greatly inconvenience building this year, but the board hope to have the foundation of the new botanical laboratory completed this fall, also expect the greenhouse will be ready for fall and winter use. We can do nothing more than to express our regret that certain features of the bill were stricken out.

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.

Cards have been received by our Faculty announcing the marriage of Miss Anna Fairchild, daughter of President Fairchild of the Kansas Agricultural College, who was at one time connected with M. A. C.

'62.

We are happy to announce that Frank Hodgman's health has considerably improved, and he will present the poem at the Triennial, instead of being unable to do so, as was reported in a late issue of the SPECULUM.

'67.

W. W. Tracy, with D. M. Ferry & Co., Detroit, visited the college June 28, where he has two sons in attendance. He promises to send two more at the beginning of next year.

'68.

F. S. Burton of Detroit has favored our legislature by his attention and interest in the passage of a bill introducing the Rhines Voting Machine into our ballot system.

'70.

G. A. Farr, orator for the alumni reunion, will be on hand with his oration in due time.

'74.

R. H. McDowell has resigned his position in the department of agriculture in the Colorado Agricultu-

ral College at Fort Collins, to accept the chair of agriculture in the Nevada Agricultural College.

Donald MacPherson, attorney-at-law in Washington, D. C., has a very satisfactory practice. He spends his spare time in reading upon scientific questions and political and ethical issues of the day. Such time not so engaged is spent in recuperation and making provisions for the family comforts of himself, his wife and one child.

'76.

W. W. Bemis has been elected Commissioner of Schools of Ionia Co. It is a noticeable fact that our graduates play a prominent part in the educational institutions of Ionia Co. L. B. Hall and E. A. Murphy of '82, with W. W. Bemis as chairman, constitute the board of school examiners.

'78.

F. E. Robson, lately one of Lansing's lawyers, has removed his office to Detroit where already he is doing an excellent business.

R. H. Gulley will spend the summer studying Greek under Dr. Edwards of the literary department at M. A. C.

C. C. Georgeson, professor of agriculture in the Kansas Agriculture College, has finished his first year's work there, and promises attendance at the triennial reunion.

F. E. Skeels is doing a handsome business in surveying and landscape gardening in the city of Grand Rapids.

WITH '79.

Frank Barnett is general missionary of the American Baptist Home Missionary Society, having his headquarters at Ogden City, Utah. His wife was a Michigan girl. He is the happy father of four children.

'81.

Dr. W. R. Hubbert has now returned from Michigan City, Dakota, and is now practicing his profession in Detroit, Michigan.

'82.

A. J. Chappell of Alba, Michigan, holds his position as commissioner of county schools for another year.

Married, June 24, at St. Joseph, Michigan, W. L. Snyder to Miss Emma L. Parsons.

'83.

J. H. Smith, a Chicago school teacher, visited the college during the last of June.

'85.

E. A. Bartmess sailed from New York, June 27, on the steamer "City of Rome" bound for Glasgow, Scotland. He will spend the entire summer visiting places of literary and historical interest, going as far south on the continent as Rome, and returning to his home at Lowell, Mass., in the autumn.

J. W. Matthews proposes to take work at his Alma Mater as a summer student this term.

'88.

A. E. Bulson graduated at the Rush Medical College, Chicago, Ill., last month and will locate for practice in Jackson, Mich.

C. B. Cook will fill the vacancy caused by the resignation of F. J. Niswander from the entomological department of the M. A. C.

F. H. Hillman is again with his Alma Mater pursuing studies for his M. S. degree, while Mrs. Hillman honors the class of '91 by being a member.

L. C. Colburn, late assistant here in mathematics, has resigned his position to accept an appointment as professor of physics and mechanics in the University of Wyoming.

WITH '88.

Will Hannaford has begun his career as a minister of the Gospel, and is preaching in Pierport, Manistee Co., Mich.

'89.

F. M. Paine is working at home on the Richview Stock Farm at Rockford, Mich.

W. E. Palmer and "Deacon" Earle, with headquarters at Albion, Indiana, will canvass for the Encyclopedia Britannica during the summer, spending only time enough to attend commencement.

David Anderson is studying law at Paw Paw, Mich.

On June 19 and 20 L. A. Clinton, assistant on the Agricultural Experiment Station, reviewed the work of the station at Harrison, Mich. He reports the crops growing finely.

W. E. Davis, who has been teaching since graduation in the first literary department of the blind school is now at the college taking work in mechanical drawing and mathematics.

Geo. J. Jenks, of Sand Beach, and a heavy mustache are taking special work in chemistry for a few weeks this term.

F. J. Niswander, assistant for two years in the Entomological Department at M. A. C., has been called to the chair of agriculture and entomology at the State University of Wyoming.

B. K. Canfield has returned from Paris, and is liable to call upon his Alma Mater almost any day.

WITH '89.

George L. Foote, again made happy. It is another girl. Cigars next, George.

'90.

John W. Toan is employed in one of Portland's leading drug stores. Quite recently he took a short recreation by visiting the college.

J. R. McColl will spend his vacation from the University at Knoxville, Tenn., studying amidst the familiar scenes of his college days.

H. E. Bunce, of St. Clair County, after spending a few months' sailing upon the lakes, visited his old familiar haunts, tried the college bus, and then returned to his father's farm.

W. J. Meyers, late of the Mechanical Department at M. A. C., has accepted the professorship of mathematics in the Colorado Agricultural College, where two years ago he was employed.

A. L. Waters, of the State Mining School at Houghton, Mich., favored his college friends with a visit in early June, and lacked not in enthusiasm on Field Day at Olivet. Mr. Waters speaks approvingly of the Mining School.

WITH '91.

G. H. Hicks succeeds J. W. Toumey as assistant to Dr. Beal in botany.

Geo. Church has a length of about six feet. The mining school where he is attending, with class of '93, is as well adapted to growth and health as to educational desires.

WITH '93.

J. I. Vincent's many friends will be glad to learn that he successfully passed the entrance examination at West Point last month.

COLLEGES.

Back pay of teachers in Spain now amounts to \$700,000.

Boston has \$40,000 worth of pianos in her public schools.

Idaho is to have a University, an Agricultural College and a Normal School.

The youngest student ever graduated from Yale is Charles Chauncey, age 15 years.

The ground will shortly be broken for the Chicago University, and the academic department buildings will be begun at once.

Out of the 365 colleges in the United States, 204 are co-educational, and women constitute 55 per cent of the undergraduates.—*Ex.*

It is said that Bismarck studied thirteen hours a day while at college. We wonder if the students at the Agricultural College do the same.

The New Stanford University buildings, which are rapidly approaching completion, are situated at Palo Alto, on an estate of 8,000 acres, which reaches from the valley of the bay of San Francisco to the foot hills of the coast range.

The following are the figures for the greatest known libraries: Bibliotheque Nationale, Paris, 2,290,000 volumes; British Museum, 1,550,000 volumes bound, and 50,000 pamphlets; Imperial Public, St. Petersburg, 1,000,000 printed volumes; the famous library of Alexander, destroyed 273 A. D., 700,000 volumes; Royal Berlin, 700,000 printed volumes and 15,000 mss.; library of Congress, Washington, 396,000 volumes and 396,000 pamphlets.

EXCHANGES.

A college needs poise as well as an individual. Poise for a college means the respect that its students have for it, combined with their respect for other institutions. The proportion should be half and half. A loyalty to our college that can see no good in other colleges, is narrow. A respect for other institutions at the expense of the one that gives us our education is mean. And all that poise means for an individual it means for a college. It means a dignity that is not stiff; a freedom that is not mistaken for boldness.—*Ex.*

Cheer a good play; cheer a good hit. If we are ahead or behind, cheer anyway. If we are retired, cheer.—*Ex.*

The *Washburn Argo* has a well-written article entitled "It Does Pay." It is well worth attention, and the truths contained are helpful to its readers.

A patriotic student is never a "chronic kicker." Never attend an institution that you cannot heartily endorse.

They both to church together went,
On devotion doubtless bent;
The preacher preached quite fervently
On Sadducee and Pharisee.
As they together homeward walked,
They both upon the sermon talked,
Said he to her, "why, don't you see,
We're Pharisee and Sadducee."
She turned on him her great blue eyes
With one swift look of sad surprise,
He quickly hastened to aver
He was her ardent worshiper.
Said he to her, "Why, don't you see,
You are the only fair I see,
And since you never can love me,
'T is that that makes me sad, you see."

—*Dickinson Liberal.*

The *Niagara Index* seems to intimate that it is the only infallible college paper printed. The June issue will leave no good impression on the minds of its readers. It seems that the editor of the department "Our Table," delighted to show his smartness at the expiration of his editorship. His keenness of thought and his ability as a critic are remarkable. We do not believe in giving long descriptions or narrations of facts that may be put in a few words. We try to instruct, not to blur the mind with gleaming generalities. And now, since the *Niagara Index* cat, Tom, is dead, we will not need to diagnose the case any further.

We wish that the students would remember the following stanza, as quoted:

"Come to the exchange table,
'T is such a pleasant sight
To see the college papers,
So beautiful and bright."

I DID NOT SUIT.

Down on my knees I seize her hand,
That maiden peerless in the land,
"O, fair one, let me press my suit!"

With throbbing heart I swear my love
By all the stars that shine above—
Oh, if she'd only follow suit!

Her frigid words my life-blood freeze,
"If you kneel there and bag your knees,
I think you'll have to press your suit."

—Brunonian

FAREWELL.

'T is your last call for copy, O! managing eds,
'T is the last time for locals
We 'll rack our old heads.

'T is the last time in print we 'll see immortalized,
Our products of genius—
So much underprized.

There is rest for the weary in store upon earth;
There is something to live for,
There 's gladness and mirth.

Farewell, ye kind readers, you 've treated us well,
The 'Varsity doings
Are the last we shall tell.—*Ex.*

ATHLETICS.

BASE BALL.

Saturday, June 27, M. A. C. played a game of base ball at Sparta with the club of that place. The game was called promptly at half past two, and as Weideman did not arrive until after the first inning, Ganzell, a Sparta player, was secured to fill his place during that time. M. A. C.'s only run was made on a three base-hit by Ganzell who finally scored. Mr. Gibb's brother, of Grand Haven, was in the box for M. A. C. and considering the little practice he had, pitched a good game. The hard hitting of Sparta and the clean fieldings on both sides were the principal features of the game.

Score:

	1	2	3	4	5	6	7	8	9	R.	BH.	E.
Sparta.....	0	5	0	0	0	2	2	0	*	9	8	1
M. A. C.....	1	0	0	0	0	0	0	0	0	1	2	3

Three base-hit, Ganzell of M. A. C., Stolen bases, Sparta 1. Struck out by Hodgins 16, Gibbs 5. Wild pitches, Gibbs 5. Double plays, Gibbs to Rittinger—Burnett to Rittinger. Time of game 1 hr. 30 min. Umpire, Clute.

Training for Long Distance Running.

E. H. POLHAMUS.

Until within a few years long distance running was something utterly scorned by the amateur athletes of the world. Lately, however, it has been rapidly rising in the estimation of the sporting fraternity, and now it holds a place in athletic sports second to but few if any. Formerly it was thought to be a natural gift to be able to run a distance over half a mile, but but now we know that any and every one can excel

in the sport under proper conditions of health and training.

When thinking of distance racing, the first and foremost thing to be thought of, is health. "Am I physically able to undergo the training requisite to long distance running," is a question which every amateur aspirant after laurels in that direction should ask himself.

In general one's own feelings may be safely followed. If you are subject to palpitation of the heart or excessive coughing after violent exercise, you are not fit for a runner. Your heart and lungs are unable to bear the strain that will be brought upon them. Hence desist from this form of contest and turn your attention to some other less severe in its nature.

Provided your heart and lungs seem strong, the first thing on going into training, is to thoroughly purge the system of any impurities which it may have gathered during a period of inactivity. This will give the vital organs a new impetus and put them into good condition for their subsequent work.

The diet should also be chosen with regard for health. Grease, spices, pastry and "slops," as many of the so called beverages, may be termed, should most emphatically be banished from the fare of the runner. Plenty of vegetables, a respectable amount of meat and stale bread together with fruits should be sufficient for one's diet while in training.

Of course there is no need of going into a discussion as to the evil of liquor and tobacco on the system. You must all be thoroughly acquainted with that.

As soon as the body recuperates from the effect of the new diet, the regular training may be systematically commenced. The candidate cannot do better than begin by walking regularly every day, three or four miles at a medium pace, to harden the muscles. Of this distance a few hundred yards may be covered at a "dog trot," in order to test the runner's real powers and increase his wind.

As the training progresses the distance run should be daily lengthened until one or two miles can be run quite fast. Now the race for which you are in training should receive special attention. The runner ought to ascertain at what points he is strongest and where if any, he should "spurt," where run for wind and in fact everything needful in running the race.

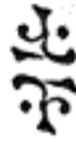
When in good condition the athlete should be able to cover the distance with as little fatigue as he would walk a quarter of a mile at commencement of training. If he can do this he is in superb form.

In running the pace should be carefully judged. A runner's trunk ought to lean slightly forward when he is in motion, the toes supporting the entire weight of the body. The head must be erect with chin slightly drawn in and the chest well expanded. In fact he should try and cultivate an easy, graceful movement, the length of the step corresponding to his best ideas, after patient trial and practice.

Lastly, in all running keep up your pace until the tape has been passed. Many races are won in this way and many lost by inattention to this fact.

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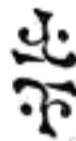
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