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ORCHIDS OF MICHIGAN.

HOMER C. SKEELS, '98.

Persons who become interested in botany are very liable to select some special family upon which they put most of their time. The selection of an order, by a botanist as his hobby-horse is influenced by many things and is often caused by peculiar circumstances. One sometimes becomes interested in the early spring flowers; arbutus is here the first to attract attention; from this we easily run along through the Indian pipe, cranberry, and wintergreen, till huckleberries are ripe, when we find ourselves deeply interested in this family of aromatics to the exclusion of many other plants just as interesting.

HUNTING FROGS.

In the boy, who is being natural on a Sunday by taking a walk in the woods, there is the peculiar bent towards destructiveness which leads him into the swamp to hunt frogs. But swamps grow more than frogs; our boy is very liable to find violets, that, for the moment, distract his destructive tastes and cause him to bend the knee before his future god.

It was on such a trip as this that a youth stumbled into a swamp that was carpeted with the peculiar plant growth that florists call "spagnum." In a little corner, out of the way, he nearly stepped on a queer looking flower. There it stood, just a little green stalk barely six inches high, but topped with a flower that looked for all the world like a snake's mouth; beautifully colored, a deep, rich red on the upper lip, the lower covered by the tongue, which was finely covered with little clubs of purple and rose.

Did you ever find anything that so grasped your senses that you dropped all you were carrying and went down before it in open-eyed wonder? And how carefully you dig around it, slowly raising the root till you have it all free, then wrapping it up in your kerchief start off home as fast as you can go. And how carefully the fond mother plants the poor beauty in her best flower bed.

When this youth reaches the stage in school life that introduces him to botany he remembers his little plant and wonders what it was. By his meagre description the teacher tells him, "It might have been an orchid, but such things are *very* rare." That settles it; if that was an orchid our lad wishes to study nothing but orchids. And so for the swamp he goes.

MEETS THE LADYSLIPPER.

Probably the first group to attract his attention is the ladyslipper tribe. In the deep tamarack swamp or low, dark woods, about the middle of May he finds a queer plant with a single flower on a short stalk springing from two bright green leaves. The flower has the usual calyx that he has studied in other flowers, but the rest of it looks like a wooden shoe with a slit down the middle as though it were made to be laced up. The color is a beautiful pink or a dark red, sometimes nearly white, always with purple veins. Taking this to the school room he learns that it too is an orchid, a stemless ladyslipper (Cypripedium acaule, Ait.) Another trip reveals the little white ladyslipper (Cyp. candidum, Muhl.) This has no slit, but the lip (or shoe), one-half inch long, is pure white with purple veins. And then the yellow moccasin flowers (C.pubescens, Willd. and C. parviflorum, Salisb.) show themselves in the oak woods, on hillsides and along the edges of streams in dark, deep woods. And here, too, a surprise awaits us, in finding the laced wooden shoe that we collected on mossy hummocks by wading knee deep in the water, growing on top of high hills under oak and pine.

At this time the little ram's head ladyslipper (C. arietinum, R. Br.) may be found in cool bogs; it has a small flower and the shoe is pointed at the toe, being decidedly "up to date," except in color, which is red with pretty white veins.

THE SHOE DOES NOT FIT.

As the school work progresses we begin to wonder where the essential organs, stamens and pistels, of our orchids can be. Other plants show them plainly enough, but our favorites seem to be all slipper. We have noticed that the shoe doesn't fit the Chinese-like foot that is thrust into it, but a little fly caught crawling out between the top of the lip and the foot seems to struggle and has a coat of yellow stuff on his back when he does get through. This tells us that a stamen is on that queer foot, and we find one on each side with the stigma just in front of them.

So here is another thing to hold our attention to the orchid family: they depend, almost absolutely, on insects for fertilization and are planned to make the bugs pay for their nectar by carrying pollen.

About this time there comes before us in the low woods a plant that seems to be all buds but doesn't flower. On closer inspection we find flowers, but they are green, and here we discover that all orchids—for this must surely be an orchid because of its non-conformity to the type flower and the presence of the lip—are not beauties. But if this is an orchid it must have a special means for being fertilized. Then we remember having read about Darwin's putting a pencil into the mouth of the orchid to see if the pollen would stick to it.

By this we find something new; no dusty, sticky pollen here; instead we have two little club-shaped yellow bodies, attached by a short stalk to a flat disk that is now adhering to our pencil. As we gaze in wonder at these little curios we see them leave their erect position and gradually fall toward the point of the pencil. This is queer; let's try another; but, in putting the pencil back, the action is explained; for right there where those pollen masses are now pointing is a shining viscid, surface which tells us it is the stigma. And again we declare that the orchid family is the queerest and most interesting in the whole botany. This little green-flowered orchid is only one of a large group, all of which have these peculiar pollen masses, some with round disks, others with square disks, and still others with long, strap-shaped disks that are nearly as long as the pollen mass itself.

In this month of early flowers we may find another orchid (Orchis spectabilis, L.) that is quite pretty. In the low woods it is most common; a spike is sent up from two or three pretty green leaves, bearing six or eight showy flowers. The upper part is a rich pink-purple, with which the pure white fan of the lip contrasts pleasingly.

THE COMING OF JUNE.

June, with its masses of beauty, is marshaled in by the little purple flower that our frog hunter first discovered; and the swamp that grows Arethusa bulbosa, L. is one that may be visited with profit to the orchid hunter once a week during the whole summer. About the woods there may be seen patches of an oval leaf, green above, slightly purple beneath, queerly plaited, as though it had been run through a fluting iron. These attract attention in the fall; visiting the spot the next June we find a few leafless stalks of yellowish-purple flowers that at first sight recommend themselves to us as being orchids. This plant (Aplectrum hiemale, Nutt.) bears the queer formation that is called puttyroot; some people consider it as edible, but the writer was very much disgusted with the taste and feeling left in his mouth after chewing one of the bulbs.

At this time the tway blade (Liparis Loesellii, Richard.) makes its appearance. It has two bright green leaves and a stalk of small greenish-white flowers. It is interesting because of the lid-like anther, whose pollen masses are without stalks, threads or glands.

THE MONTH OF GREEN ORCHIDS.

This is the month of green orchids, and the pine-oak woods, with high, dry knolls that drop off into damp ravines abound in queer species of this genus. The Habenaria hyperborea, R. Br. grows in wet hollows on the hill tops; this is peculiar from being self fertilized to a great extent.

Hooker's orchis, (H. Hookeri, Torr.) is low with two oval leaves spreading flat on the ground, the flowers have a creamy tinge, and the lip is nearly one and one-half inches long, H. orbiculata,Torr., is a very noticeable plant when growing; the two leaves are almost perfect circles, each six inches in diameter, lying flat on the ground on opposite sides of the stem, of a queer fattish-green color—one stops still to admire them. The flowers are quite large, but green; the spur is peculiar, being nearly two inches long and shaped like a long handled club.

Habenaria dilitata, Gray., is an exception in color, having a close spike about a foot long of small pure white flowers. It grows in open glades of tamarack and spruce swamps. The ragged fringed orchis (H. lacera, R. Br.) comes at this time, and is green, but belongs with the July Habenarias in having fringed lip. So far those of this genus have had entire or merely notched lips, but the lacera has a lip with a fan-shaped outline, but the fan has been stripped with a pencil, as by some Sunday school boy, from the center towards the margin, till nothing is left but threads. All of these plants, as do the July fringed orchids, show distinctive differences in the shape, arrangement, and action of the pollen masses; and no greater pleasure can be derived from any botanical study than may be enjoyed by interviewing these different species of rein orchis in their native haunts.

BUT JUNE IS NOT LIMITED TO THESE GREEN FLOWERS.

Indeed, the richest and most magnificent of the whole family, even rivaling those fantastic curiosities from South America, bloom in the cool shade and open glades of our spruce swamps, during this month. The Calopogon pulchellus, R. Br. for instance, filling the glades with its fine stalks of flesh pink flowers, each an inch square, six to ten on a stalk, growing as thick as the grass in a pasture, forms a view not easily forgotten. And here *is* a queer one; look how you will, that flower is "out of whack!" It looks to be bottom-side up; really it is the only one that is right side up, the lip being on the upper side, while the others are wrong-side up, caused by a twist of the pod during growth.

THE QUEEN OF ORCHIDS.

Then back on the edges of the glade, among the spruce and tamarack, one finds that almost grandest of orchids, the showy ladyslipper. After following the train of flowers through the Arethusa, yellow, pink, and white, moccasin flowers, and now with an armful of Calopogons, each having been avowed the finest specimen of plant life ever seen, you find yourself confronted by a clump of tall, rich-leaved plants. Searching the ground for little wonders, one stumbles into this clump with its crimped leaves, six inches wide and ten inches long, before he realizes what he has found; and there, right on a level with his eye, nodding a dewy good morning, stands the queen of the orchid family. The slipper is there; it is two inches long, a beautiful light cream, mottled with a delicate flesh tint that would shame the fairest cheek the sun ever saw; and, to back it up, instead of the twisted yellowish green sepals of the others, we find them broad and petal-like; and, partaking of the coloring of the lip, they surround it with a halo of pure white. And a bunch of six or ten stalks, with from one to three flowers on a stalk, stands before you; not only this, but the swamp that grows one plant of Cypripedium spectabile, Salisb., usually grows hundreds of them; and we have seen many a staid, prim schoolma'm gather her arms full and then sit down on a log to rest, tired out, but with a look in her eyes and an expression on her face that would be a revelation to those who only see her when pale from the usual coat of chalk dust.

And now, having tired ourselves out, we find the moss under our feet has a covering of slender plants, with only a single leaf in the middle of each stem and one at the top. Above this is a single flower, or sometimes two, an open mouth like the Arethusa, but not so large. It is a delicate thing, not over a half inch wide; a bright rose pink, with a little creamy shading on the lower lip. This looks fragrant at first sight, and it is; a peculiar fragrance, not strong, but after being confined in a basket for a half hour, on opening the cover we are reminded of those delicate eastern prefumes, of fine permeating fragrance, which is not like anything else, but seems to have the best part of carnations, roses, lilies, cloves and spices, combined in one breath.

The July Habenarias are the fringed orchids. The first to appear is the purple fringed orchid, (H. psycodes, Gray). This grows in swamps quite abundantly, and has been found along roadsides even in settled districts. It has a spike of purple flowers, each about three-quarter inch square. The spike often consists of forty or fifty flowers; the lip is fan-shaped, and delicately, though not finely, fringed.

At about the same time, H. leucophea, Gray, makes its appearance. This has light cream-colored flowers with a greenish tint. The spike is sometimes one-sided, and in dark woods is often one and a half feet

long. The lip is three-parted, and the parts are finely fringed.

Soon following these, come the color orchids, yellow and white fringed, (H. ciliaris R. Br. and H. blephariglottis, Torr.). The tamarack swamp is their home, and a gaudy place they make it. The yellow fringed has a spike about eight inches long, of flowers over a half inch square, that are the brightest salmon yellow ever created. And the white fringe is as purely white as the other is yellow.

In this month there is one green orchis, (H. virescens, Spreng.), which is peculiar in having a prominent nose right in the middle of tne lip. July also gives us another curiosity, the Coral root, (Corallhorhiza multiflora, Nutt.). These plants are parasitic, have no leaves, and no green coloring matter. The roots look like a piece off of a coarse coral rock, the stalks are yellow, and the flowers, arranged in a loose spike, are purple or yellow, dotted with white. These grow in rich woods on dry hills and along ravines.

AUGUST ADDS HER MITE.

August furnishes a few orchids in this part of the state. The rattlesnake root (Goodyera pubescens, R. Br.), has roots running along the surface of the ground, with here and there a clump of dark green leaves about two inches long; these are curiously marked with white veins. They are evergreen, and one is often startled by seeing them in the dry leaves, late in fall or early in the spring. From the center of the cluster of leaves grows an almost naked stalk that bears a spike about three inches long, of small, white, sack-like flowers, that are very interesting in appearance and in their means for fertilization.

The last of the month, and lapping over into September, the ladies tresses, (Spiranthes cerinua, Richard.), may be found along railroads, through rich swamps and in damp meadows. This little beauty has grass-like leaves, and a short, close, twisted spike of creamy white flowers; these have a delicious odor, strong and sweet.

There are many other orchids in Michigan; we have named twenty-four, and the state can boast of forty-six. The genus Microstylis, containing two species, called Adder's mouth orchids, has but one leaf about half way up a slender stalk, that bears a loose spike of minute, green flowers. Farther north the little Calypso borealis, Salisb., is found. This has but one leaf from a little bulb, resting in the moss, which produces a short stalk bearing a single, snowy, pink, purple, and yellow flower, much like a tiny lady-slipper.

The Crane fly orchis (Tipularia discolor, Nutt.), produces a long spike of little greenish flowers that look just like mosquitos! Then the Pagonia has a brother, (P. divaricata, Nutt.), whose ribbon-like sepals and petals are over two inches long.

Orchids are perennials, and many of them can be grown with success under cultivation. They repay, by their foliage, almost tropical in some, and none at all in others, and their peculiar flowers, varying from a shoe to a fly in shape, and with the most exquisite blending of bright and sombre colors, all the time that need be spent in preparing a place for them. And the study of their means for fertilization, opens to one's mind new ideas regarding the laws and methods of nature.

AT THE COLLEGE.

Harry Westcott entered College last Tuesday.

W. G. Amos, '97*m*, entertained his mother one day last week.

E. A. Baker, '99*m*, spent Sunday at his home in Carson City.

E. M. Kanter, with '96*m*, visited the College last Friday evening.

Mrs. F. C. Kenney is receiving a visit from her sister, Miss Shaw.

Representative Redfern visited his son, Scott J., a few hours last Friday.

The Hesperians entertained the co eds of the campus last Saturday evening.

The Y. M. C. A. and Y. W. C. A. handbook and College directory will be out tomorrow.

Our reporter saw President Snyder feeding a threshing machine one day last week.

Carl N. Hoppough, '99, and M. J. Richmond, '00, wheeled home last Friday and returned Monday.

Eugene Price, '00, while playing foot ball last Thursday sprained the muscle of his shoulder quite badly.

Mr. and Mrs. K. L. Butterfield have taken up their residence at 309 Washtenaw street west, Lansing, Mich.

A practice game of foot ball with Lansing high school on Thursday evening resulted in a score of 6 to 0 in favor of M. A. C.

L. C. Brooks, '92*m*, returned to M. A. C. last Thursday. The "Sacramento," on which he was second engineer, has been laid up for the winter.

Messrs. F. C. Kinney, R. L. Stocoum, C. D. Butterfield, and G. D. Miller went on the excursion to the home of Wm. McKinley last Friday evening.

The State central committee of the Sound Money Democratic party has placed the name of Dr. Howard Edwards on its ticket for member of the State Board of Education.

The ladies of the First Presbyterian church of Lansing gave a reception in the church parlors last Friday evening to Frank Yebina, '95, who will soon leave for Japan.

Lieut. Lewis and family are spending the last of their vacation at 115 West 23d street, Baltimore, Md. The Lieutenant reports the son as flourishing—carries his father's sword now.

At a meeting of the International Association of Farmers' Institute Workers, to be held in Chicago tomorrow and Thursday, K. L. Butterfield, '91, will read a paper on "Causes of Friction in Farmers' Institute Work."

The McKinley and Hobart Bicycle Club of Lansing made a run to the College last Wednesday evening. They and the students were given a short political address from the steps of the Library by Labor Commissioner Morse.

F. T. Williams, '98, and T. L. Hankinson, '98, broke the record in student labor last Friday. They were assigned, by Mr. Fulton, to build a fence in No. 12. It is said that in two and one-half hours Williams laid up two rails and Hankinson one.

The Trust and Try Circle of King's Daughters will give an entertainment in the Y. M. C. A. rooms Oct. 23. Mrs. Lewis Esselstyn will give an address on Persia, after which light refreshments will be served. Admission 10c. All are invited to come.

The M. A. C. Republican club elected the following officers last Thursday: President, J. W. Rigterink; vice president, S. H. Fulton; secretary, C. W. Loomis; treasurer, George F. Richmond; executive committee, C. C. Pashby, D. J. Crosby, J. D. McLouth.

The Imperial Hungarian grass from field No. 5 was threshed last week and yielded 80 bushels of seed. The ground planted was less than two acres and the crop was drilled in rows three feet apart. The straw from the entire crop was hauled at one load.

WOMAN IN THE SHOP.

Prof. C. L Weil.

The editor of the Record requests an article, and suggests for a subject, "Woman in the Shop." I understand that our editor had the school, or college, shop in mind when making the suggestion, and that he wishes the writer to consider the value to women of a training in shop practice, and especially in such practice as is usually considered to afford a particular field for men.

The work of a school or college shop is generally arranged either as a part of a manual training course or as auxiliary work in a professional training, or preparation for a certain trade; that is, the schools having shops, are, as a rule, devoted to giving instruction in manual training, engineering, or trades. The shop, of a certain kind at least, serves as a valuable manual training aid in the education of girls. By manaul training we do not mean a training of the hand to bring about increased productive skill, but rather "a training of the mind through the senses of touch and perception." The use of tools in working materials helps greatly to secure and fix the habit of *thinking*.

The claim is made by some that training in cooking, sewing, and similar pursuits is more fitting and profitable for girls than a training in the use of tools, and we feel that such is the case in so far as what may be termed a direct profit is concerned, but believe that the training of young girls in the use of tools is fully as fitting and furnishes more profitable results from a "true manual training standpoint" than work along any of the lines first mentioned. We must bear in mind, when considering the values of various kinds of work as aids in manual training, in what the true object of manual training consists. I have defined manual training as "a training of the mind through the senses of touch and perception;" it would seem evident that the result sought in such training is not productive skill or the production of a salable article. C. M. Woodward, an authority, says in a quite recent article: "The pre-eminent value of such training (manual) should never be jeopardized by the trifling value of a concrete product." We believe Mr. Woodward's statement is worthy of careful consideration, in so far as *pure manual training* is concerned. Observation and a consideration of the conclusions arrived at by those who have made manual training a special study lead to the belief that among what may be called *primary manual studies* none are more conducive to the attainment of desired results, in the case of either sex, than some kinds of woodwork, for instance such as light carpentry and wood carving.

We would note, however, the necessity of providing such instruction as mentioned above at an *early age* in order that full value be derived from the same, and will conclude concerning *pure manual training* by stating that the manual training exercises furnished by carpentry and wood-carving are of particular value in the case of either boys or girls.

We will next consider "Woman in the Shop" as a student of some one of the so-called technical professions, for some of such professions offer great opportunities for women, for instance architecture. What woman can accomplish in the line of architecture is illustrated by the career of Miss Gannon, of New York city.

When a young woman enters upon the study of one of the technical professions, involving in its study practice in shops, it is not only desirable, but necessary, that she carry on such shopwork as is undertaken by young men engaged in the same profession. The work of engineering and similar technical school shops, it must be understood, is not arranged for manual training instruction, as previously defined, is bordering rather on the work of the trade school shops, but while in the latter shops the object sought is the training of pupils for a definite trade, not only a training in principles and fundamental processes, but also a training of the hand for the sake of productive skill. In the first named the intention is to present to the student the underlying principles and the main processes of a number of trades that touch directly upon the student's future professional work; the acquisition of a knowledge of a number of trades is the object sought rather than manual dexterity in any one trade, and such knowledge constitutes professional capital. Consideration of the foregoing will, we believe, show how essential it is that young women entering upon the study of a technical profession involving shopwork should make such work a part of their course of study.

We conclude then that it is both essential and fitting in primary manual training and in the study of certain technical professions for girls and young women to undertake certain lines of shopwork that have been considered in the past by many to form particular fields for boys and young men.

Need we consider "Woman in the Shop" as the student of a special trade, and of such trades as men have been considered heretofore peculiarly adapted to undertake? It would seem that woman has entered upon this work also. At a recent meeting of the American Society of Mechanical Engineers Mr. Gobeille, the manager of large industrial works, made the following statement: "Seriously I believe the 'woman question' will be prominently before the society in a few years. In a little while women will be running all the lighter tools in machine shops and factories. *This is certainly coming.* I am doing it and others must come to it." We are of the opinion that the above is a somewhat extreme view of future industrial condition, nevertheless the statement is one worthy of serious consideration because of its source.

We know that at the present time women are employed in shops and foundries doing work that has been considered in the past suitable only for men, still we have not expected that women would enter the industrial walks of men to the extent predicted by Mr. Gobeille, but if Mr. Gobeille predicts correctly we cannot but apprehend with some uneasiness our future industrial condition. Fortunately inventive genius and mechanical skill have been developed to an extent among our people that precludes at least the possibility of industrial scenes in this country such as are described by Mr. F. F. Prentiss in a recent number of Cassier's Magazine as occurring in Japan. We quote from Mr. Prentiss' article, wishing to point where a considerable ingress on the part of woman into what are considered, in this country, the industrial walks of men may lead in some cases.

Mr. Prentiss describes the apparatus used for driving piles in Japan and says: Attached to the hammer block were twenty-seven ropes carried up to the top of the frame and down on the outside, look-

ing very much like an old-fashioned May-pole. Twenty-seven women had hold of the ends, and with a sing song, all together, pulled down; up the rod four feet traveled the hammer, then, *at a scream*, all let go and down it came on top of the pile. These women were paid twenty cents in gold per day."

Mr. Prentiss does not describe the style of dress worn by these workingwomen, but we do not doubt, from what we have learned of Japanese customs and costumes, that the clothing of these women would have been quite satisfactory to the most radical "new woman." We certainly hope it was a better condition of affairs than that described by Mr. Prentiss that the gentleman from the South had in mind who, at a banquet, when called upon to respond to the toast, "Woman," spoke of woman, in reference to man, as, "once our superior but now our equal."

However, we are inclined to believe that in case women in this country are going into the machine and similar shops it is because of lack of opportunities to learn such trades as cooking, weaving, and housework, trades that many people consider more especially fitting for women. It would seem that a condition of affairs confronts us that points out the necessity of establishing numerous trade schools where young women may be taught those trades for which women are more particularly adapted. But some may say that we should not attempt to draw any line in regard to "adaptability," and that a woman has "as much right" to become a machinist or a blacksmith as a man or as some other woman to become an architect, and we do not question this right. Perhaps it is simply "an old-fashioned notion of propriety" that leads some to prefer seeing a woman at work sewing, cooking, or at household duties rather than engaged in cleaning castings. Woman finds a place in the manual training school shop and in the professional school shop, and it is also true that in many of our factories, in certain lines of work, a place is made for woman, but we are inclined to believe that such an "wholesale" entry of women into machine shops, foundries, iron works, and so on, as Mr. Gobeille might lead us to anticipate, would not tend toward the elevation of mankind, and that it is not advisable to arrange for girls' trades schools along such lines.

THE ASH OF ORCHIDS.

Dr. R. C. Kedzie.

N. H. Sept. 1, 1896.

Dr. Kedzie: Dear Sir—I have been interested in reading a reprint of your paper entitled "The Chemical Tripod in Floriculture," in the Florists' Exchange. In it you make the statement that no plant can grow in the absence of potassium and phosphorus. Are you correct in this? If so, will you kindly let me know where epiphytal orchids get these elements. I am working on the subject of nutrition for orchids and want to secure all the light available. Gray states that oxygen, hydrogen, nitrogen and carbon are the only absolutely necessary elements needed by all plants. Of course the terrestrial plants do not flourish without the mineral elements. Do you know whether orchids analyze any mineral elements? Of course there is dust in the atmosphere; but it hardly seems possible that any solution of it can reach many varieties of orchids in their natural habitat. I should be under great obligation if you can give me any scientific information on this point.

Yours truly,

J. M. W. K., M. D.

Agricultural College, Sept. 7, 1896.

Dr. J. M. W. K.:

Dear Doctor—Your esteemed favor of Sept. 1st is received, in which you call in question my statement that no plant can grow in the absence of potash and phosphorous, and ask how can epiphytal orchids get potash and phosphorus?

In this discussion it seems to me that the first question to be decided is whether such orchids contain these ash elements? If epiphytal orchids do not contain these ash elements it is useless to inquire where they can get them. I have therefore directed my attention to the question whether epiphytes contain potash and phosphorus. Unfortunately these plants are very precious in our green houses, and we do not "have orcids to burn." I therefore first turned my attention to an epiphyte growing on forest trees in Florida, and known as "tree pine," the Tillandsia bulbosa. The roots of the plant had freely penetrated the bark of the tree and the bark had to be cut away to get the separate plant. On burning this plant there remained three per cent. of ash, from which 25 milligrams of real potash (K_2O) and 18 milligrams of phosphoric acid were obtained.

A quantity of Florida moss, Tillandsia usneoides, was burned which gave 2.20 per cent. of ash. Analysis of this ash gave 3.50 per cent. of real potash, and 1.73 per cent. of phosphoric acid. This ash contained a large amount of salts of lime and magnesia, and nearly half their weight of salts of soda.

Desiring to subject an epiphytal orchid to the same process I obtained from Mr. Gunson, the College Florist, a fragment of Dendrobium Nobile, which weighed 11.245 grams when dry, and left .335 grams of ash when burned, or 2.97 per cent. of ash. From this ash 28 milligrams of potash (K_2O), and 19 milligrams of phosphoric acid (P_2O_5) were obtained. The ash of all these epiphytes contained, in addition, lime, magnesia, soda, silica, and oxide of iron—the same elements that are found in plants growing in the soil.

If an epiphyte shall be found that *leaves no ash when burned* we may assume that ash materials are not necessary for such plant. The fact that the lowest forms of plant life, such as mould and yeast, contain potash and phosphorus in their ash, is significant. I have just gathered a fungus growing on the dead limb of a black walnut tree, and find it contained 3.65 per cent. ash, and yielded 38 milligrams of phosphoric acid. The presence of potash and phosphoric acid in all forms of plant life is something more than an accident, and bears some important relation to nutrition.

I now return to the question with which you started: Where do these plants get these vital minerals? Manifestly from some outside source, because plants do not form mineral matter. That epiphytes are on the alert for mineral matter is shown by their careful conservation of the ash elements they already hold. Note the thin and papery character of the cast-off leaves of orchids in comparison with the shed leaves of forest trees. The orchids seem to search the pockets for the last penny before they throw aside their worn-out clothes.

Plants that grow within the reach of the ocean spray carried far inland by the wind, such as the Florida moss, may obtain ash elements from sea salts lodged on them. The large amount of the soda salts found in Florida moss would strengthen this impression.

Parasitic plants, like the Mistletoe, by means of their haustoria penetrate the cambium of their host and drink in with the sap both mineral matter and organic food. In like manner the arboreal epiphytes by their roots penetrate the bark of their host and may derive mineral matter from this bark which is seven times richer in ash elements than the wood. Many saprophytes derive their mineral as well as their organic food from decaying wood, and it is reasonable to suppose that arboreal epiphytes should derive their mineral food from bark.

If the orchid is attached to brick or an earthen pot, such materials are merely hardened soil, and from them the plants, by the acid juices of their roots, may extract mineral matter. Florists often place moss in the frame that supports the orchid to retain water and the plant may derive a supply of ash. The firm attachment of the roots of orchids to the wooden frame that gives them support, suggests the possibility of the extraction of mineral matter from the wood. If the water given the orchids contains mineral matter this becomes an evident means of supplying ash food to the plant. By water culture I have raised stalks of Indian corn three feet high with no source of mineral food except well water frequently changed. It may be found that by watering orchids at the proper time with a very dilute solution (one part in a thousand of water) of the phosphate of potash, the growth of the plant may be promoted.

It is claimed by some that atmospheric dust is the source of ash elements to epiphytes, but this is doubtful unless the dust settles upon the bark or other support of the plant and thus comes in contact with the roots of the orchid. We have no evidence that the leaves of land plants absorb mineral matter. The normal channel for mineral matter is through the roots of plants.

This is a long letter, but your question could not be answered in a few lines.

Chemical Department.

DOES POLLEN BEARING DEPLETE THE VIGOR OF THE PLANT?

Above is the title of a thesis which M. G. Kains, '95, is preparing for an M. S. degree in Agriculture at Cornell. Mr. Kains writes, "If any botanically inclined alumnus can give me references to literature on the drain of pollen-bearing on the plant, I will be much obliged to him. References are extremely scarce."

A NORTH MICHIGAN DAIRY HERD.

Gordon H. True.

It has been my privilege during the last two weeks to test some of the cows in one of the remarkably good dairy herds of Michigan. The owner is one of the enterprising farmers of the state, and, to one who has visited that part of the country before, it will be no surprise to know that he is located in the northern peninsula; for, if energy and thought are put into the operation of farming anywhere, it is in the north of Michigan. The farm is mostly within the city limits, where land is poor but high priced, and carries a herd which, as a result of careful selection, intelligent breeding, and diligent weeding out, is good enough to pay handsome dividends even in these times of low prices, and on a farm of almost pure and unadulterated sand.

One of the things preached by Agricultural Colleges is the importance of the dairyman's keeping a record of the milk and butter fat production of his herd. Six years ago the owner of this farm had learned this lesson and began such a record. The milk of each cow is weighed two days in a week throughout the year and the average of these is taken as the average for the year. He has thus been enabled to intelligently weed out the poorer ones, and pedigree nor price have not been spared where performance was lacking. Two years ago the average yield from forty-four animals was 8,028 pounds of milk for the year; last year thirty-six head averaged 9,171 pounds, while this year, the figures at present indicate, that the average will be over 10,000 pounds per head, and twelve of the thirty-six animals are heifers with first calf. The time was when this record would have satisfied the owner, but now he has set his mark at 12,000 pounds of milk per head. A test of the herd milk showed an average of 3.2 per cent. of butter fat.

The treatment of young heifers is unusual and interesting. They are bred so as to come in before two years old, and about three months before calving feeding grain is commenced and gradually increased till, when the calf comes, the heifer is on full grain feed. No trouble has been experienced with this method, and it is argued that thereby it is possible to determine one year earlier whether or not the heifer is worth keeping in the herd.

While all the animals are well fed none are stuffed or even forced to their full capacity, and there has been but one case of milk fever in the last three years.

The herd consists of registered Holstein Fresian cattle owned by Mr. W. S. Carpenter, of the Broadway Dairy Farm, Menominee, Mich., and has been kept to produce milk and cream for the city trade.

It seems to me there is something to be learned from Mr. Carpenter's experience.

Farm Department.

NEW BOOKS IN THE LIBRARY.

The following books have recently been added to the library:

Brewster—Memoirs of Sir Isaac Newton, 2 vols; Treatise on optica.

Cross—Free-hand drawing; drawing lessons for grammar grades; drawing lessons for primary grades.

Davis—Standard practical plumbing, vol. 2; Dictionary of National Biography, vols. 45, 46.

Duthie and Fuller—Field and garden crops of northwestern provinces, 3 vols.

Dyer—Handbook of light artillery; firing regulations for magazine rifle, caliber 30.

Forbush and Fernald—The gypsy moth (Mass. Bd. of Agri).

Home—Precis of modern tactics.

Lamb—English dramatic poets, 2 vols.

Lintner—Injurious insects of N. H., 10th reports.

Matthews—Poems of American patriotism.

Michaux—Flora Boreali-Americana, 2 vols.

Prang—Primary course in art education; complete course in form study and drawing, 4 vols.

Voorhees—First principles of agriculture.

Wegg-Prosser—Galelio and his judges.

Also a number of government reports and books from the bindery.

The longer I live the more certain I am that the great difference between men, the great and the insignificant, is energy—invincible determination, an honest purpose once fixed—and then the victory. That quality will do anything that can be done in the world; and no talents, no circumstances no opportunity, will make a two-legged creature without it. —*Goethe.*

The M. A. C. Record.

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SALUTATORY.

I was asked by the RECORD to compose a "salutatory," but what I shall say will hardly be worth the dignity of that title. By resolution of the Board of Agriculture it has been made a part of my duties, in addition to Farmers' Institute work, to canvass for new students for M. A. C. In this work I am under the direction of President Snyder, but I will take the liberty to say that plans are already being carried out for soliciting special course students, and a large number of circular letters and leaflets are now in process of distribution all over the State. I would like to urge, upon the part of every one who receives the RECORD,—alumni, old students, and farmers generally, co-operation with us in securing a large attendance of special course students this coming winter. Many young men will be glad to improve this opportunity if they only know of it, and a personal word calling attention to the advantages offered will often do more than scores of letters. So we most earnestly ask for your aid. If you will send to President Snyder the names of half a dozen young men in your neighborhood who might be induced to come they will be furnished with detailed information regarding the courses. We shall have more to say about our plans as they develop and are ready for execution. Meantime we shall be glad to know that you are with us in an effort to enlarge the usefulness of M. A. C.

KENYON L. BUTTERFIELD, '91.
Student Field Agent, M. A. C.

CO-OPERATIVE BOOKSTORE.

A mass meeting of faculty and of students was held in the Chapel last Friday evening to hear reports from the committees appointed the previous week.

Dr. Edwards, chairman of the committee to see about transportation between Lansing and the College, reported as follows: The street car company assures us good service, at least, until the present controversy with the city is settled in the courts, which will probably be a long time in the future. A bus line would not be supported by the surrounding community so long as the cars run. Therefore, it does not appear to the committee feasible to go into the transportation business.

Prof. Hedrick reported for the committee on co-operative association work: At its first meeting the committee agreed to abandon the idea of a general store on account of the starting of the street cars.

As to a bookstore the committee reported some interesting facts, based upon investigations carefully made. The average price of fourteen text books used at the College is $2.45. These books can be got by wholesale at an average price of $1.81, leaving a margin of 64 cents for transportation, cost of handling, and profit, to say nothing of the additional margin that will result from discounting bills.

As an example of what has been done Prof. Hedrick referred to the annual report of the Albion College Cooperative Association, which has been in successful operation for nearly three years. Some of the elements which this association has found valuable are worth considering:

1. Life membership fee, $1.00, entitling members to all special privileges and discounts.
2. Two prices on all books, members getting them at the lowest figure.
3. Start with 100 paid memberships.
4. All sales spot cash.
5. Discount all bills. Albion College started with a capital of $100 and discounted all bills at the beginning of the first term, with sales over $1,000 during the first few days.
6. Fix prices at such a figure as to yield a small profit above expenses. Use surplus to enlarge business.
7. Select a good, hustling business man for manager and pay him a fair salary.
8. Exercise great care in ordering books, taking pains to avoid loading up with books not needed.

This association has succeeded in greatly reducing the cost of books to students and is worthy our careful consideration.

A lengthy discussion, in which both faculty and students participated, followed the report, and the committee was instructed to formulate a plan of organization to be reported at the next meeting.

STATE AGRICULTURAL REPORT.

Every farmer now-a-days needs a few well selected books bearing on his calling, which shall contain, besides the leading principles of the art, a record of the experience of the best farmers in his own region. To the progressive farmer of Michigan no better foundation for such a farm library is to be had than the reports of the Michigan State Board of Agriculture, containing as they do, in permanent form ready for the library shelf, a report of the farmers' institutes, with the leading papers, discussions, and questions and answers, brief reports upon the state fair, state dairymen's association, a full report of the officers of the State Agricultural College, with the work of the various departments, and a complete reprint of all the bulletins of the state experiment station. The reports of the State Board of Agriculture thus contain a fund of agricultural information adapted to the needs of the Michigan farmer to be found nowhere else. When it is considered that these reports are published by the state and furnished free as long as the supply lasts, it would seem that nothing more were needed for them to find a place in nearly every farm house in Michigan.

The volume just issued, for the year 1895, is the largest yet published, containing 900 pages. Among its special features of interest are a report of the first series of farmers' institutes held under the increased appropriation, a report of the first convention of Michigan farmers' clubs, and a brief report of the 4th annual meeting of the State Live Stock Association. Among the topics treated by the farm department of the Agricultural College and experiment station are new forage plants, variety tests of wheat, dairy matters and reports of feeding experiments. Some of the leading horticultural topics are an account of the new irrigating system at the College, recent experiments in treating plant diseases, a report of the South Haven substation and special articles on various fruits. Among the contributed articles we notice an interesting account of the lettuce industry at Grand Rapids.

Finally, we would say, get this book and as many of the earlier volumes as possible. The publication of these reports began in 1849, and the volumes for several of the earlier years may still be had. These reports are all indexed, and an index covering the first forty years has been compiled in one volume. And again finally, do not store these books in the garret, or use them for scrap books because they are free, but place them on shelves within easy reach and you will be surprised to find how many questions of every day agriculture can be answered by consulting their pages.

A VACATION TRIP.

PROF. WARREN BABCOCK, JR.

August 27th last found Mrs. Babcock, Mr. C. D. Butterfield and myself aboard a D., L. & N. excursion train bound for Petoskey and northern Michigan. At Grand Rapids our train passed to the tracks of the C. & W. M. road and we were dropped at our destination about 9 o'clock that evening. Through the kindness of Prof. W. O. Hedrick our party was safely lodged for the night, though, owing to the great number of excursionists in the city, many were less fortunate. I heard one farmer tourist complaining that he was forced to give the price of two bushels of wheat for a bed that night.

Petoskey stands on rising grounds along the south shore of Little Traverse Bay and looks out upon the waters of Lake Michigan. Its natural advantages as a resort and as a business center, the fact that the air alleviates the sufferings of hay fever patients together with the enterprise of its residents have all combined to make it a thriving northern town.

As we pass along and around the bay we come successively to Bay View, Roaring Brook, Wequetonsing, Harbor Springs and Harbor Point, the last two being on the northern shore of the bay. All these together with Petoskey make up one long line of resorts connected by the G. R. & I. railroad, which runs to Harbor Springs following the line of the beach. Bay View has grown from a camp meeting ground, with tents of poles and canvas, to a large collection of well-built summer cottages along well-laid out streets. The old stump that did service as a pulpit in the early days of the resort has given place to a large assembly hall, capable of seating the immense crowds that yearly attend these.

Our party experienced some trouble in finding the stream from which the resort, Roaring Brook, derives its name, but our efforts were finally rewarded. A truly beautiful stream it is, running through a wild, tangled wood of cedar, its waters clear and cold and all its surroundings having an air of peace and quiet—not in the least suggestive of the name the natives have given it.

At Harbor Springs, with Prof. Hedrick and Mr. C. J. Foreman as guides, we visited the Catholic Indian school. Here Poor Lo is introduced to the mysteries of the three R's and receives instruction in the industrial arts of his pale-face brother. The boys' and girls' departments are strictly separate, Catholic sisters having charge of the girls, while the boys are instructed by men. Though many of the pupils were away on their vacation, and thus the institution was not in operation, enough was seen to convince us that the school gives its students a training that cannot fail to better their condition. Mr. Butterfield invested a quarter in a pamphlet printed in the Indian language by a young Indian printer, and I doubt not that that same pamphlet proved to be intensely interesting. To appreciate the efforts of these few Catholics to raise the red man from his present deplorable condition, we must recollect the adverse circumstances under which this work is carried on. The general government has withdrawn its help from such schools, though it never encouraged them much; and consequently their support must come from the church, for the Indians themselves cannot contribute. Add to the financial difficulties those that come from the stolid and indifferent natures of the pupils and we have enough to discourage the most persevering.

Of course we visited the other places, helped ourselves to the bark of the birches regardless of signs warning us not to; rode in the ferries upon the bay; got sea sick—that is the others did, and otherwise enjoyed ourselves. After all, the chief attraction of each resort is its view of the bay, with its varied shades of blue water, its tossing waves or glassy smoothness, its white, pebbly beach, its border of green hills, its craft, its clustered towns.

Our rains had been followed by strong westerly winds and chilly, unpleasant weather, and we already sighed for a "sunnier clime," so after a stay of four days in the Petoskey region we started for home by way of Mackinac Island. No description can do justice to this "Gem of the North." Here is seen in what stupendous proportions Nature builds. Arch Rock, Sugar Loaf Rock and Lover's Leap are sights that repay one for the longest journey; while associated with these are some of the most stirring events of Michigan's early history. Standing on the sight of old Fort Holmes, 336 feet above the water and named in honor of the American hero of 1814, the straits, the lakes, the island lay before us. The sight is simply superb.

We must hurry on. Wedenesday, September 2d, we take the steamer City of Alpena, of the D. & C. line and start for Toledo, calling at Cheboygan, Alpena, Sand Beach, Port Huron, and Detroit. Barring some rainy weather and a little rough water when just out from Alpena the trip down the lakes and rivers was greatly enjoyed by us all. It was during the rough weather just mentioned that the writer experienced his first sea sickness, and he now thoroughly appreciates the force of the saying that one so afflicted is not afraid that he will die, but that he won't die. However, we left the steamer for an hour at Alpena, and after a walk upon terra firma and a visit to one of Alpena's large lumbering mills, our stomachs were restored to a settled condition. A brief stay of two hours in Toledo and we return to Detroit, there to part company with Mr. Butterfield, who, from this point, will have to account for himself. After a visit in Detroit and our old home in Washtenaw County Mrs. Babcock and myself returned to the College Sept. 12th.

Mathematical Department.

THE PURE FOOD LAWS.

John I. Breck, '84, Inspector.

I am pleased to assure the readers of the Record that the operation of the Pure Food Laws during the past year has been very successful and of vast benefit to both consumers and producers of food products in our State. When the law went into force, to say that 95 per cent. of the spices sold were adulterated, is a conservative statement. The sophistication of other articles was enormous, especially of vinegar, jellies, lard, honey, buckwheat flour, and other articles. At the present time not more than 15 per cent. are found adulterated. This means much to the farmers if we consider vinegar alone. A year ago practically no pure cider vinegar was sold through jobbers and wholesalers. At present about the only "cider" vinegar in the market is made from apples. A careful investigation has convinced me that the enforcement of the law created a market for 200,000 bushels of apples that would otherwise have rotted on the ground. At the average price of 10 cents per bushel it put into the depleted pocketbooks of Michigan orchardists the snug sum of $20,000, or a sum equal to the appropriation for two years. Carload upon carload of artificial jellies were shipped back to manufacturers and their place filled with pure fruit jellies. The honest and industrious honey bee is now producing our honey, instead of its being produced by the drones who manufacture glucose at a cost of not to exceed two cents per pound. Buckwheat flour is now ground at the flouring mills instead of at the gypsum quarries.

But while we can congratulate ourselves upon these corrections, there still remains one evil which has so far ridden haughtily and defiantly over all opposition, viz.: the oleomargarine fraud. Experience has proven that the only way its sale and use can be *regulated* is to deny to it the privilege of masking in the guise and garb of pure butter. Twenty-four states now have such a statute, and Indiana, Illinois and Michigan are the only dairy states which have not such a law. Two years ago over eight thousand people petitioned our legislature for such a law, but their petitions were denied, although there were practically no protests filed against it. The farmers and dairymen who are looking after their own interests should exact a pledge from every candidate for senator and representative that if elected he will favor the enactment of such a law. If he will not do so, then vote to leave him at home where he can not ruin what should be the chief agricultural industry of Michigan.

AMERICA'S FUTURE IN LITERATURE.

Edwin A. Baker, '99.

The true index to the power and influence of a nation for the time being, as well as the sole guarantee for the perpetuity of its glory in the future, is the nation's literature. Every ancient monarch, or commonwealth which has achieved greatness, has become indebted to some literary genius for the preservation of its fame. Nations of the present day will be known to future ages only as they are portrayed in the literature of today.

We are now entering upon a new era in the literary world. The stage which was marked and emphasized by such men as Longfellow, Lowell, Whittier, Emerson, and Holmes, is now past.

What will be the character of the coming age? In the past we have little to stimulate our national vanity. We may pride ourselves upon the richness of our treasures, upon the abundance of our resources, upon the freedom of our institutions, yet we must concede that as yet we hold a very modest place in the domain of letters. America is poor, when its literature is compared with the accumulated literature of a thousand years of which England has to boast.

Conditions which produce great epic writers, lyric poets, dramatists and writers of fiction, have been with us entirely wanting.

We, as a nation, have been too busily engaged in a struggle with Nature, in building homes and in erecting a civilization to allow much time for the pursuit of literary work. It is not strange, then, that having been engaged in preparing a dwelling place for a great nation, that the development of our material interests has far outstripped our culture and refinement, that we are rich in money, but poor in literature.

When we have attained a certain degree of age and growth the genius of our people will take a new turn and then we can hope to change the opinion now held by many, that literary talent of a high order must necessarily be trans-atlantic.

Until the present time we have enjoyed the vigor and activity of an early and growing youth, a time so unfavorable to calm, pensive thought and the cultivation of letters. When we have outlived this stage of restlessness which now characterizes us and gained the calmness which comes with age, then can we hope to gain distinction in literature.

This conclusion is verified by existing conditions in our country today. The East has already become settled and quiet. Here we have the birthplace of our only American literature. The West is yet in an unsettled state and has taken no part in the world of letters, which is worthy of mention. This same reason explains the superiority of Europe over our nation as a whole. It cannot be denied, however, that literary genius is manifest in the national mind. Although the evidences justifying may be few, yet they are sufficient to justify the most brilliant expectations.

Our country, despite its youth, is not barren, even of the most delicate growths. Irving, Bryant, Lowell, Holmes, Longfellow, Emerson, Hawthorne, Webster, and Whittier constitue an assembly which would do honor to any nation.

As we look from this point in our progress to time a century removed can we not see before us an era which will even rival the brightest splendor of the most celebrated literary period in England?

It is then that the golden age of America will begin the era which will establish her literary fame.

Thought, which, since its escape from the tyranny of the dark ages, has gathered strength as it gained freedom and scope, will reach its maturity of growth in a land so broad and free, and an atmosphere so congenial as ours, and blossom forth in a literature unrivaled in its richness and beauty and matchless in its strength.

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Sunday Chapel Service—Preaching at 2:30 P. M.

Y. M. C. A.—Holds regular meetings every Thursday evening at 6:30 and Sunday evenings at 7:30. S. H. Fulton, President. C. W. Loomis, Cor. Secretary.

Y. W. C. A. regular weekly meetings for all ladies on the campus Tuesday evenings at 8 o'clock, in the ladies' parlors. Meetings on Sunday evenings with the Y. M. C. A.; Miss Edith F. McDermott, president; Miss Alice Georgia, cor. secretary.

Natural History Society—Regular meeting second Friday evening of each month in the chapel at 7:30. L. R Love, President. J. W. Rigterink, Secretary.

Botanical Club—Meets first and third Friday of each month in Botanical Laboratory at 7:30. T. Gunson, President. W. R. Kedzie, Secretary.

Dante Club—Meets every Wednesday evening at 7:30 in Prof. W. O. Hedrick's office, College Hall. Prof. A. B. Noble, President.

Students' Organization—S. H. Fulton, Vice-President. H. L. Becker, Secretary.

Columbian Literary Society—Regular meeting every Saturday evening in their rooms in the middle ward of Wells Hall, at 7:00. E. H. Sedgwick, President. C. F. Austin, Secretary.

Delta Tau Delta Fraternity—Meets Friday evenings in the chapter rooms on fourth floor of Williams Hall, at 7:00. W. Judson, President. C. P. Wykes, Secretary.

Eclectic Society—Meets on fourth floor of Williams Hall every Saturday at 7:30 P. M. C. D. Butterfield, President. Manning Agnew, Secretary.

Feronian Society—Meets every Friday afternoon at 1:00 in Hesperian Rooms. Miss Sadie Champion, President. Miss Marie Belliss, Secretary.

Hesperian Society—Meetings held every Saturday evening in the society rooms in the west ward of Wells Hall at 7:00. J. D McLouth, President. R. H. Osborne, Secretary.

Olympic Society—Meets on fourth floor of Williams Hall every Saturday evening at 7:00. H. W. Hart, President. C. J. Perry, Secretary.

Phi Delta Theta Fraternity—Meets on Friday evening in chapter rooms in Wells Hall, at 7:00. W. G. Amos, President. F. H. Smith, Secretary.

Union Literary Society—Meetings held in their Hall every Saturday evening at 7:00. E A. Robinson, President. S. F. Edwards, Secretary.

Tau Beta Pi Fraternity—Meets every two weeks on Thursday evening in the tower room of Mechanical Laboratory. G. A. Parker, President. E. H. Sedgwick, Secretary.

Club Boarding Association—I. L Simmons, President. H. A. Dibble, Secretary.

Try and Trust Circle of King's Daughters—Meets every alternate Wednesday. Mrs. W. B. Barrows, President. Miss Lilian Wheeler, Secretary.

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Three Holstein bull calves, three months old or younger, all by Maurice Clothilde and out of the selected cows Oatka 3rd's Wayne, College Houwtje and College Pauline Wayne.

Owing to the crowded conditions of the stables these animals will be sold cheap.

Nine Yearling Shropshire Rams out of thoroughbred ewes and by a prize Shropshire ram.

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NEWS FROM GRADUATES AND STUDENTS.

Mrs. A. F. Gordon, Grand Rapids, visited in Lansing last week.

Mark Smith, with '86, is in the lumber business at Caseville, Mich.

F. W. Herbert, with '96*m*, is with Wicks Bros. Mfg. Co., Saginaw, Mich.

Frank R. Poss, '94, is the popocratic candidate for county clerk in Huron County.

W. J. McGee, '96, has begun housekeeping near the World's Fair grounds in Chicago.

Will E. Hall, with '92, of Covington, Ky., visited his parents at Tecumseh, Mich., in August.

Mrs. Louise Sipley has issued invitations to the wedding of her daughter, Miss Winnifred Sipley, to James R. Petey, with '96, Thursday, October 22, at 8 p. m.

L. R. Love, '96, is engaged in landscape gardening for the Nelson Bogue Nurseries, Batavia, N. Y., and likes it. He will come to Detroit this week to put out $200 worth of stock on the Walker farm.

D. T. Randall, with '96*m*, writes that he will return to the University of Illinois this week. He expects to finish the course in Mechanical Arts this year. He has been spending his summer vacation inspecting pipes in eastern cities.

The *Otsego County Herald* mentions Guy L. Steward, '95, as one of three holding first grade teacher's certificates, H. A. Eldridge, '98, is among those holding second grade certificates. Guy L. Steward is also mentioned as a prominent candidate for a position on the county school examining board.

H. Clay Newman, with '97, is with his brother in the scenic photography business. He is at present in Ishpeming, U. P., and writes of seeing Will Anderson, with '96*m*, who has a $900 position with the Lake Superior Iron Company; and Mike Dwyer, a former M. A. C. athletic trainer, who has a class in wrestling there. Mike recently got hold of a Cornish miner who threw him in three seconds.

M. A. C. was fairly well represented at Camp Snyder, Island Lake, Mich., where the Michigan National Guards had their annual encampment this year. In the service were E. A. Stricker, '90, Detroit, Company H; L. W. Watkins, '93, and LaVern Heesen, with '93*m*, Tecumseh; R. L. Clute, '96, Ionia; W. W. Taylor, Jr., with '97*m*, Houghton; Dwight A. Buren, with '94, Kalamazoo. Among the visitors on Sunday were: H. W. Kelley and Charles R. Haigh, with '94; W. A. Ansorge and George B. Craw, with '95; R. B. A. Buck, '96; I. L. Simmons, '97; and G. C. Van Alstyne, with '96, who is now on the editorial staff of the Grand Rapids *Evening Press*.

The *Sunday Free Press* of October 4 speaks in the following complimentary terms of our alumnus, Judge William L. Carpenter, '75, one of Detroit's circuit judges:

"While Judges Frazer and Carpenter were sitting in the chancery branch of the court on State street, last winter, they became chums, each often consulting the other about the tough legal problems that came before them for adjudication. This judicial intimacy has contiued since their transfer to the law courts. Judge Carpenter follows a case closely. His recent decision in the celebrated Ward estate contest, delivered orally at the close of the trial, is considered by his associates and members of the bar one of the most remarkable achievements in the history of the judiciary of this state. It showed a familiarity with all the intricate details of the case, the numerous law points raised and cases cited and was an exhaustive exposition of the doctrine of implied trusts.

"Judge Carpenter, while hearing a case often sits with his right elbow on the desk and the hand supporting his head. Oftentimes he becomes so interested in an attorney's argument or a witnesses' testimony that he will step down from the bench and take a seat near the speaker so that nothing relevant to the issue may escape his attention. He, like Judges Hosmer, Lillibridge and Frazer, wears an ordinary sack coat, and dresses generally more like an ambitious attorney with a small practice and a large family on his hands than a jurist drawing $500 a month. Judge Carpenter's favorite authors are Dickens and J. Fennimore Cooper."

The clouds may drop down titles and estates;
Wealth may seek us; but wisdom must be sought;
Sought before all; but (how unlike all else,
We seek on earth!), 'tis never sought in vain.
—*Edward Young.*

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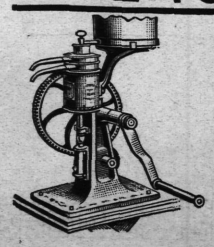

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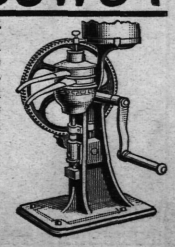

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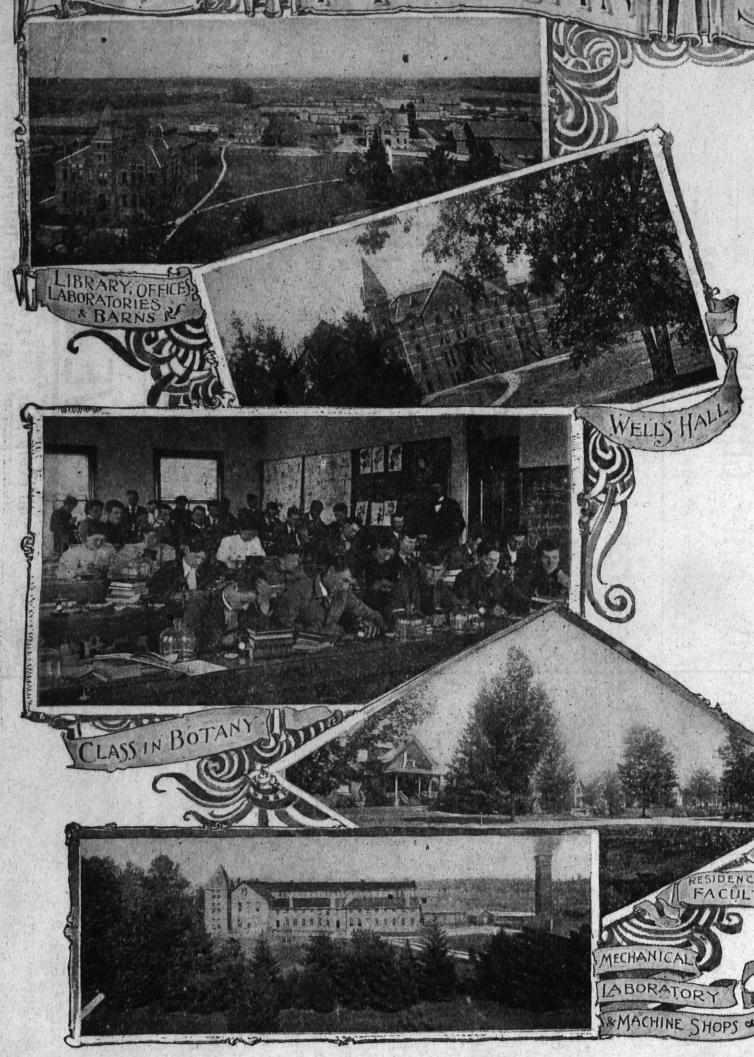

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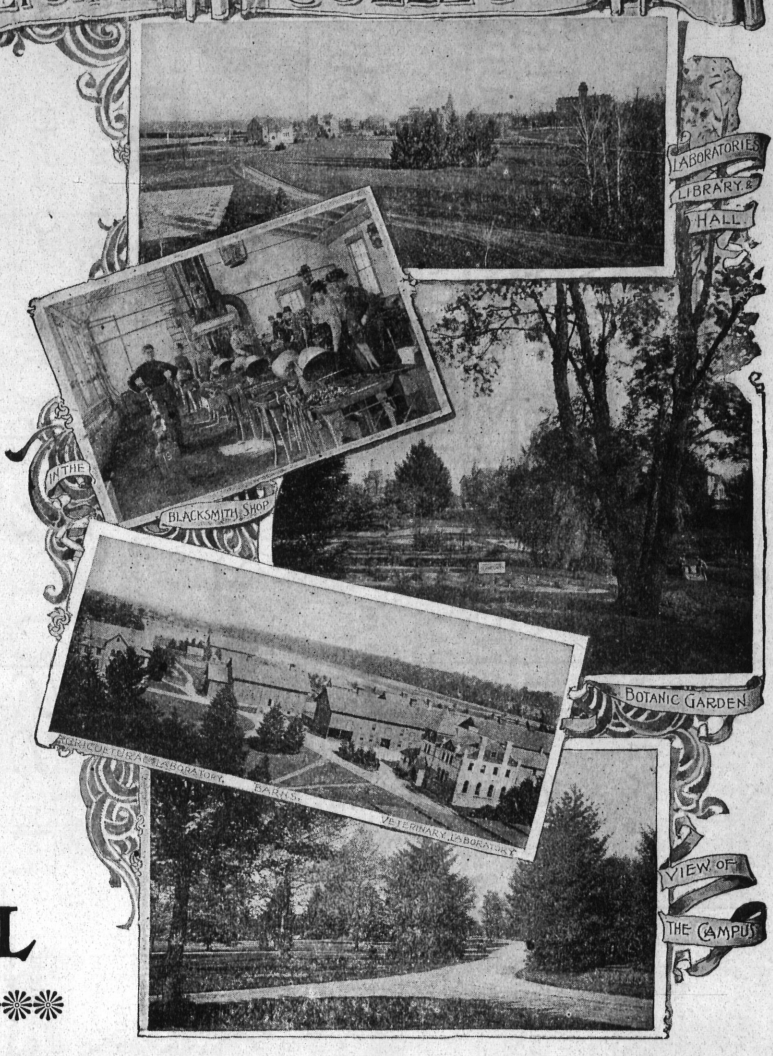

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