

## The Chrysanthemum.

THOMAS GUNSON.

The season of chrysanthemums and foot ball is now at its height. In the halls of the rich, and in the cottages of the poor; on street corners and in the windows of many stores can be seen masses of this Queen of autumn flowers. It is unfortunate that the dude and the chrysanthemum were ever associated. There is such a marked inconsistency between them that I refuse to recognize the association. The growth of the one is upward; the other is downward.

The chrysanthemum was originally a native of China and Japan, and it was introduced into cultivation in 1764. It was not until sometime in 1868, however, that it received its first introduction to American society, at a flower show held under the auspices of the Massachusetts State Horticultural Society.

Public attention was again attracted to it twenty years later by what was considered a rash speculation on the part of an enterprising nurseryman, of Cambridge, Mass., who paid to a Boston florist the enormous sum of \$1,400 for the stock of one variety.

The chrysanthemum is a hardy or half-hardy herbaceous plant, and is treated as such in some parts of Europe, in the south of England, and in the milder portions of our own country. In the neighborhood of Washington, D. C., and all through the South, it grows luxuriantly in the open air, flowering until late in the autumn. The small early varieties may be grown as far north as this in the same way if planted in some sheltered place and protected with a good covering of leaves in winter; but the late flowering kinds require greenhouse protection in order to develop the large flowers on stiff, straight stems to suit the flower buying public.

For many years the plants were grown exclusively in pots; in fact, many are so grown yet, especially if intended for exhibition, or to sell as flowering plants.

The usual method is to propagate the plants by cuttings during the months of March or April, and keep growing as rapidly as possible, shifting them into larger pots as they may require, and as soon as all danger of frosts is over, the pots are plunged in sand or ashes up to the rim out of doors, and kept carefully watered. Any lack of attention in this respect will be seriously felt, for they never seem to get over even once getting dry. The young shoots are pinched back occasionally, so as to form dwarf bushy plants, and this should not be done later than the first of August. As soon as there is danger of frosts, the plants are brought into the green house. If large flowers are desired, all the side buds are pinched off, just as soon as they appear, leaving only the terminal bud.

To get very large flowers a somewhat different method is adopted. The plants are propagated later in the spring—say April or May, and instead of potting them they are planted out on benches, or in solid beds in the green house, up to as late as the first week in August. They are planted

from eight to twelve inches apart each way, according to the variety, in a cool house, and kept growing as rapidly as possible, until they flower, which is usually about this time. If large flowers are desired all side shoots and lateral buds are kept pinched out. The flowers of plants grown in this way attain enormous size, and range in price from \$1 to \$5 a dozen.

A very good example of this method of culture can be seen in the east forcing house. It is especially interesting, in that the latest varieties can be compared with those of an established reputation. The different colors and habits of the plants is an education of itself, as illustrating the various hues and style of the flowers that best meet the public taste.

Growing chrysanthemums has become a highly specialized industry. Great ranges of glass houses, irrespective of location, are being devoted to the growing of this one plant. In places where other flowers are grown, a specialist in this line is an absolute necessity.

Raising new varieties has proved a profitable and fascinating work for some men—notably, Smith & Son, of Adrian, Mich. Several large nurserymen in the East have likewise distinguished themselves in this line, but some of the very best varieties originated at Adrian.

Like its near relative, the ox-eyed daisy, the chrysanthemum originally had only one row of ray flowers around the outside, so that the flower was nearly flat, with a somewhat rounded yellow center. Through cultivation, hybridization and cross-fertilization, its disk florets have been changed to ray flowers until they are made to form the nearly spherical shape some of them now are.

They belong to the largest and highest specialized order of plants, which includes the sunflower, the aster, the dahlia and the dandelion.

### Greenhouse.

### Good Work for M. A. C.

An expression of gratitude is due R. S. Campbell, '94, for the earnest and intelligent work he is doing for our College.

A few such men working in the public schools of our State would soon solve the problem of securing students for the Agricultural College. Mr. Campbell is superintendent of the Yale schools, and his high school students edit a school column in the *Yale Expositor*. Among the items in the issue of November 6, we find the following:

Mr. Campbell has placed a catalogue of the Michigan Agricultural College, together with some circulars, descriptive of the short courses at M. A. C., upon our reading table. The course is admirably fitted to give graduates of our high schools a broad education along the most practical lines and at a very moderate expense. The short special courses beginning Jan. 4 and lasting six weeks, are very interesting, and the entire expense is less than \$25. We noted that students were in attendance from nearly every state in the union and that Scotland, Siberia, Ontario, Nova Scotia and Japan had representatives. Strange as it may

seem, far off Japan has twice as many students as St. Clair county. There is no tuition charged for residents of the State, and Mr. Campbell informs us that graduates from our High school will be admitted without examination. Mr. Campbell spoke Monday morning of the advisability of pupils in our public schools planning for a higher education. He said that good health, determination and perseverance were three essentials that would enable any boy or girl to attain a college education. We have the first, and it is to be hoped the last, and why not make the second ours for a good representation at the Agricultural College.

### The College Orchards.

H. P. GLADDEN.

The old apple orchard, originally comprising about nine acres, was set in 1858. The plantings were mostly Northern Spy, Baldwin, Talman Sweet and Seek-no-further. The location chosen was not a good one, so far as soil and exposure are concerned. The soil, for the most part, is a sandy loam, and the ground, in many places, low and wet, with a quicksand foundation. Of the original setting not a Baldwin remains. The Northern Spys and Westfield Seek-no-further have withstood the unfavorable conditions best. In some years the crop of apples borne has been a large one, but the general productiveness has not been what could have been expected had the location been better. Orchards, to give best results, should be situated on the higher lands, and the soil be of a gravelly loam, or of a clayey nature, and with a good strong clay sub-soil beneath. Many of the Northern Spy trees have been used as stocks to graft newer varieties upon. One portion of the old orchard has been left in sod for a number of years, while another part has had thorough cultivation during the season when cultivation should be kept up. The better appearance of the trees and the larger crops of fruit borne on the cultivated portion has been marked. This orchard has been largely used for purposes of experimentation in the use of the various fungicides and insecticides.

The old pear orchard is on the hill just west of the President's house and near the main entrance to the grounds. There is a small area of heavy clay land, about the only place where soil of this class is found, which was thought the best location available for pears. The varieties planted here were, for the most part, old and well-known sorts. The orchard did well for a number of years and produced some excellent crops of fruits. Four or five years ago, pear blight made its appearance and did considerable damage, but unsparing pruning and entire removals where necessary have kept the disease in check and but very little was seen the past season. This orchard has also been much used for experimental purposes.

Around the hospital building are planted peaches; plums, of American, European and Japanese varieties, and quite a collection of cherries, mostly of Russian sorts. East of the barns on the horticultural department is a general assortment of plums, numbering

specimens of the American varieties. These were set out in 1887.

In 1890 an additional twelve acres was obtained from the agricultural department at the eastern limits of the College grounds. A portion of this is quite sandy and on a slight eminence; here peaches have been planted. On other portions pears and apples have been set out in considerable variety. The trees have been set closer than they are expected to stand, when fully grown, with the intention of removal of some when necessary.

Containing, as the College orchards do, upwards of 500 varieties of apples, 100 of pears and of plums, 50 cherries, together with many quinces, apricots, mulberries, etc., excellent opportunities are offered students and visitors to become familiar with the habits of growth and merits of many sorts of fruit. Propagation of trees is done by students from sowing the seed to grafting and budding. This work gives the College stocks to work new varieties upon and trees to replace those that die and to enlarge the orchards when advisable.

### Horticultural Department.

### Program of Conference of Michigan Farmers' Institute Workers.

Agricultural College, Friday,  
Nov. 20, 1896.

Afternoon,—Agricultural Laboratory.

1:45—Introductory, Hon. C. J. Monroe, President of the Conference.

2:00—Model lecture, Prof. Clinton D. Smith.

2:20—Model discussion, carried on by workers.

3:00—Criticisms and comments on the above.

3:15—Brief discussions on the following topics:

1. Illustrating lectures.
2. Adapting lectures to locations.
3. How to draw out discussion from the farmers.
4. State workers aiding in discussions.

3:45—The duties of the conductor, Chas. W. Garfield.

General discussion.

Evening—College Chapel.

7:00—Miscellaneous topics for ten-minute discussions:

1. The question box.
2. Getting acquainted with the farmers.
3. Women's sections.
4. Advertising M. A. C. and Experiment Station.
5. Granges and farmers' clubs.
6. Railroad and hotel rates, and accounts.

8:00—Institute principles and practices in several states, Kenyon L. Butterfield.

Discussion.

Both sessions will be open to any who may desire to come.

### Wooden vs. Iron Ships.

Mathematical calculations show that an iron ship weighs twenty-seven per cent less than a wooden one, and will carry 115 tons of cargo for every 100 carried by a wooden ship of the same dimensions, and both loaded to the same draught of water.—*Popular Science*.



### At the College.

There are now 250 students enrolled.

C. B. Laitner, '97, spent several days in Detroit last week.

E. M. Hunt, '99, who has been sick several days, is now able to be about again.

We are sorry to learn that T. A. Chittenden, '97, is having a struggle with la grippe.

L. H. Van Wormer, '95, has returned for post graduate work in geometry, botany and zoology.

A. B. Cook, '93, drove over from Owosso to spend Sunday with us. He expects to take the dairy course next term.

The Farm Department is compiling a descriptive index of varieties of wheat. The list now numbers over 2,000 varieties.

It would pay you to visit the forcing-houses to see the fine display of chrysanthemums. They are gorgeous—all colors, shapes and sizes.

The King's Daughters will meet tomorrow with Mrs. Snyder; text, "Measure;" lesson, the seventh chapter of Matthew; leader, Mrs. Babcock.

Miss Addie McGillyvra, of Owosso, a friend of Prof. Cook's family and one of the M. A. C. party at the World's Fair, has enrolled in the Women's course.

H. R. Parish, '95, awoke familiar echoes in our corridors and on our campus last Saturday and Sunday. He will return to Chicago in a few days to resume work in a draughting office.

We were misinformed regarding one of the election wagers mentioned last week. Kramer does not black Redfern's shoes, but Redfern and Elliott each black Kramer's shoes ten times.

Among the recently enrolled, not mentioned elsewhere, are: Misses Lu D. Baker, Bertha Wemple and Bertha Thoman, of Lansing; Messrs. C. H. Parker, of Grand Blanc, and D. B. Lanting, of Overisel.

Miss Marie Belliss entertained about fifty of her friends at Abbot hall last Friday evening—a birthday party. The entertainment consisted of a progressive medley of games. Mr. Lyman was awarded first prize, a bunch of chrysanthemums, and Miss Mamie Baker the consolation, a toy mouse. Refreshments were served.

There will be a meeting of the M.

A. C. Grange in the Columbian Society rooms Tuesday evening, Nov. 17, for the installation of officers. The presence of all members is desired. It is expected that Mrs. Jerome Dills, of De Witt, will be with us to install the officers, and Mr. Holden, of Capitol Grange, will also give us a talk on that evening.

The eighth annual contest of the M. A. C. Oratorical association will be held in the First Congregational church, Lansing, Friday evening, December 4, 1896. The board of directors is as follows: H. E. Van Norman, Hesperian society, president; T. Chittenden, Columbian society, vice president; J. N. Goodrich, Eclectic society, secretary; Elwood Shaw, Olympic society, treasurer; and L. S. Munson, of the Union Literary society.

The M. A. C. Grange, after a few months' intermission, met Tuesday evening, Nov. 10, and elected the following officers: Master, Prof. C. D. Smith; overseer, H. E. Van Norman; lecturer, S. H. Fulton; steward, J. D. McLouth; assistant steward, G. H. True; chaplain, Thomas Hankinson; treasurer, T. Gunson; secretary, H. W. Hart; gate keeper, S. J. Redfern; Ceres, Mrs. L. R. Taft; Pomona, Mrs. C. F. Wheeler; Flora, Mrs. T. Gunson; lady assistant steward, Mrs. C. D. Smith.

We evidently did Alma an injustice when we thought they were trying to avoid a game of football with us. We went to Alma Saturday, played them a stiff game, but lost by a score of 18 to 16. If our team could have a team to line up against in practice we could soon develop speed, endurance and skill, but with nothing to break our interference but a bunch of evergreens and nothing to "buck" but the wind, we do not develop very rapidly.

The palm room in the greenhouse contains three kinds of banana trees, the Abyssinian, dwarf, and true bananas. Along the roof of this room trails the curious "Dutchman's pipe." The Spanish bayonet, rubber tree, Norfolk Island pine, the many varieties of palms, banks of ferns, and brilliant foliage plants, are also interesting. Then, in another room, are the flaming poinsettia with its overflowing honey-cups, the curious screw pine, the fragrant jasmine, and many other interesting and beautiful plants. In the houses below the bank are carnations, pansies, violets and chrysanthemums.

### Memorial Exercises.

Following is the program of exercises in memory of Hon. Edwin Willits, president of the Agricultural College 1885 to 1889, who died October 23, 1896, to be held in the chapel of the College at 2 p. m., Nov. 19, 1896:

Music by the choir.

Prayer.

Opening remarks by Hon. Franklin Wells, president of the Board of Agriculture.

Paper by Governor Rich.

Address by Professor Daniel Putnam, member of the faculty of the State Normal School during President Willits' administration as principal.

Music by the choir.

Address by H. B. Cannon, of the class of '88 and private secretary to President Willits while assistant secretary of agriculture.

Address by Dr. R. C. Kedzie, senior member of the faculty of the Agricultural College.

Music by the choir.

### Charcoal Burning by Two Generations.

W. G. MERRITT, WITH '93.

If all the lumber now standing in this state could be utilized for lumber, the charcoal industry would languish, but timber unfitted for lumber manufacture is made use of by the application of a chemical principle to convert a waste material into marketable products. The changing of wood into charcoal is a chemical change. The application of heat to the wood fibre breaks up the chemical combinations of carbon, hydrogen and oxygen, giving a great variety of new compounds. Many of these compounds are volatile and pass away as vapors or gases, but the main part of the carbon of the woody fibre is liberated from combination by itself and remains behind as charcoal. While it resembles wood to some extent in appearance, it has shrunk in weight to about 25 to 30 per cent of the original weight of the wood from which it was made. It is not absolutely pure carbon, for it still contains 4 per cent of ash and about 4 per cent of the other constituents of woody fibre.

### CHARCOAL BY THE EARLIER GENERATIONS.

The method employed by the first generation of charcoal burners, and still in use to some extent was to pile the wood to considerable height in pits dug for the purpose and covering with soil after the mass of wood has been started to burning. Charcoal results by this treatment as well, as by our improved modern methods, because air is excluded and heat present. To convert additional wood into charcoal called for digging more pits. To avoid this labor, permanent fire-brick ovens were constructed. These are round, shaped like beaver huts, and so well constructed that they last for years. The odor which such charcoal ovens emit is caused by the escaping smoke, which consists of a mixture of gases and vapors which are inflammable, but which rarely are burned at the top of the oven.

Six of these brick ovens were built near Trowbridge a dozen years ago, and operated for four or five years. Many of the students of about that time remember that they had it impressed on them that the southwest wind is Michigan's prevailing wind, so strong were the creosote odors from these charcoal ovens one and one-half miles away. These ovens were the means of clearing, at considerable profit, several hundred acres of swamp lands in this neighborhood.

By either of these two methods of charcoal burning, in pits or ovens, the smoke escapes to the atmosphere. In the case of the mud pit it usually takes fire on escaping through the cracks. But from the more lasting, thick-walled, bee-hive kilns it escapes quietly without taking fire. Whether this smoke burns as flame or not, it becomes part of the atmosphere. Flame is merely a visible evidence of rapid chemical change. It is the process of rapid oxidation of carbon or of vapors or gas containing it. The process may be rapid or slow. When the oxidation is slow there is no flame. The only difference is an alteration of the

factor, time. So the combustible wood gases which escape without burning, reach by the slow process the same state of oxidation as those that happen to burn immediately to permanent compounds. Likewise the charcoal is eventually converted into permanent gases in performing the function for which it was made. In this way all of the carbon of the original wood finds its way to the atmosphere, from whence in the economy of nature it is taken up by the breathing pores of the foliage of plants and trees, to enter into new woody fibre, ready to be again converted by another generation of charcoal burners into charcoal.

The burning of a stick of wood is very like the burning of a kiln of wood into charcoal. Wood put onto a bed of live coals becomes heated; the wood fibre breaks up; the volatile portion as it escapes is ignited by the heat from the coals; the free carbon corresponding to the charcoal becomes heated, and, as it is exposed to the air, takes fire. It burns slowly and lasts as live coal after the volatile portion has burned. If air is excluded (as by covering it with ashes), charcoal results.

The first gas mains ever laid were put down in the city of Paris for the purpose of saving these waste gases from charcoal burning. That is, wood was the first material from which illuminating gas was made. But chemists discovered that one of the vapors in the mixture which comes from the wood is alcohol, and this led to a large saving in the industry. For thirty years wood alcohol has been thus recovered. Its recovery was so profitable that many works were erected especially to produce it. This chemical discovery so changed the industry that the former principal product, charcoal, got to be regarded as of least consequence and hardest to market.

### CHARCOAL BY THE PRESENT GENERATION

is produced by placing the wood in horizontal iron retorts nine feet long and five feet in diameter, which are set in brick work like boilers and connected with copper cooling coils in water tanks. The vapors are thus condensed as a black liquor and the very combustible non-condensable gas is burned under the retorts, thereby assisting to heat the wood which is being charred inside the retorts. The liquor condensed by the coils has from three to six per cent both of wood alcohol and acetic acid, which are separated and recovered by suitable chemical treatment. The acetic acid is combined with lime to form a neutral solid, which is then bagged and sent to Germany where the acetic acid is refined and returned to our markets. The alcohol is distilled repeatedly till reasonably free from impurities and water, when it is sent into the market to be used as a solvent for varnishes for wood and in electrical construction. A cord of wood is made to yield from six to ten gallons of alcohol.

### THE NEXT GENERATION OF CHARCOAL BURNERS.

Aside from the valuable products, wood alcohol and acetic acid, condensed and saved by modern methods, there is much more to do in the recovery of waste in charcoal burning. On distilling the crude condensed liquor to obtain the alcohol there remains behind a thick oily tar for which no use so far has been found. It contains many complex compounds,—common paraffin is one, and it was while investigating the composition of wood

tar that Reichenbach, a German chemist, first discovered paraffin in 1830. From the near one hundred charcoal factories in this country thousands of gallons of wood tar annually are either burned or dumped into swamps, or put anywhere to get rid of it without damaging property. To make this material of use or to profitably obtain useful material from it is the problem before the charcoal burners of the coming generations.

#### The Farmers' Club.

E. A. BAKER, '99.

The farmers' club is a growth of recent date in the social organizations of this country. It has been advanced only in the last few years. In no division of society has organization been productive of more improvement, however, than it has in and among the farmers of our country. Farmers, as a class, have come to feel the need of such organization. The club meeting is to the farmer what the political meeting is to the politician, the teachers' institute is to the teacher, or the congress of religion is to the church member—a means for advancement along their respective lines of work.

Their mode of operation is this: Leading men, and women—for the women take quite as active a part in this work as do the men—who realize the good that may come from organization, meet and arrange a program, to be delivered at some future appointed meeting, which is to be held at some farmer's home. Everyone is invited to come and bring with him his wife and a well-filled lunch basket. On the appointed day a permanent organization is effected, with the necessary officers and committees. The forenoon is spent in making a tour of inspection of the farmer's crops, stock, buildings, etc., and this foreseen visit by his neighbor farmers stimulates him in his endeavor to have everything in good order. The noon hour having arrived, every one produces the required lunch basket and proceeds to replenish the inner man. Following this is the program, which consists of music, recitations, the presentation of specially prepared topics, and the discussion of each. Topics on state questions, questions relative to local government and improvement, means of educating the children,—and the farmer as well, are all discussed ably and with keen interest, to the welfare of the community.

It has been recently stated by one in a high position in our land, that the farmer is too highly educated. Now, he may be too highly educated to benefit a certain class of individuals materially, but he certainly can appropriate, for his own welfare, all education which will strengthen his ability to successfully carry on his business. The farmers' club is a very active promoter of this kind of education.

The good which does come from these meetings cannot be too highly estimated. Here the farmer meets his fellow farmer, discusses methods of farm management, different modes of culture; in fact, there is an interchange of ideas which can be but for the benefit of every one present. The science of farming demands advancement, not only in theory, but also in practice, and this advancement can not take place except as it is effected by the individual farmer. The social benefits which arise from such gatherings are not a few. They furnish relief, both to the farmer and his wife, from the too often wearisome monotony of farm life. Club meetings come

to be looked forward to as one would anticipate a holiday or a visit.

Every summer it is the custom for several clubs to unite and have a picnic, which is a united club meeting. The work of the several clubs in every county or immediate counties is augmented by the annual Institute, which is conducted by men sent out by the State Farmer's Institute. Delegations from each club are in attendance at these meetings and take an active part.

The clubs of Michigan have a joint organization, known as the Associated Farmers' Club. This association has a department devoted to its use in our leading state agricultural paper, The Michigan Farmer. This department is at present conducted by A. C. Bird.

Much has already been accomplished in the way of reform by the joint action of the clubs. Taxes have been lowered considerably in several of the leading counties of the state. Much is being done toward the adoption of the "good road" movement. Unworthy officials have been replaced by others who were better fitted for office. Much attention has been given to our state institutions, both penal and educational. In fact, these meetings seem to awaken a very active interest in affairs which hitherto have been left entirely in the hands of a few politicians.

The time is not far distant when the club meeting of the farmers of every township will be of more importance, and equally as permanent, as the venerable town meeting. When farmers are organized, and operations conducted in harmony with existing circumstances, then can they make themselves felt in the world, and can place themselves on equal footing with organized capital.

#### News From Graduates and Students.

John W. Tracy, '96, has so far recovered as to be out again.

L. C. Smith, with '97, writes from Gaylord that he will return to M. A. C. next term.

Mrs. MacArthur, mother of Duncan D. MacArthur, '94, died at her home in Cass City, October 29.

It is reported that John W. O'Bannon, '89, has enlisted in the 6th Regiment of Cavalry, U. S. A.

J. H. Steele, '96m, left last Wednesday for Rockford, Ill., to take a position in a draughting office.

Alex. Moore, '89, Port Huron, was elected circuit court commissioner by the Republicans of St. Clair county.

At the recent republican ratification meeting in Cass City, Supt. Gerritt Masselink, '95, was one of the speakers.

E. O. Ladd, '78, Old Mission, Mich., was reelected register of deeds in Grand Traverse county by a handsome plurality.

E. Noyes Thayer, '93m, is designing for the Dickenson Engraving Co., Grand Rapids. His address is 366 Fountain street.

G. C. Lawrence has bought a farm just out of Ypsilanti, and will move there this week to engage in the fruit and poultry business.

W. W. Tracy, '93, passes his examination, and receives a permanent appointment in the Agricultural Department, Washington, D. C.

Harry W. Tracy, '94, who is traveling for D. M. Ferry & Co., was confined to his room in a town in Northern Maine, from the middle of October until a few days ago, by an abscess.

J. E. Clark, who took post graduate work here in the summer of '95, is president of the Oceana County Teachers and Patrons' Association. This is his third year as principal of the Shelby schools.

E. Peck Safford, '91m, made a business trip to Lansing last Tuesday and came out in the evening to see his old friends. He is still with the Lake Shore and Michigan Southern Railroad Co., but is now in the office of the blacksmithing department at Elkhart, Ind.

Prof. W. M. Munson, '88, horticulturist in the Maine State College, has finished, for the present, his post graduate work at Cornell University and returned to Orono, Me. He writes: "I am always pleased to receive the weekly visits of THE RECORD and to renew the acquaintance of "Auld Lang Syne."

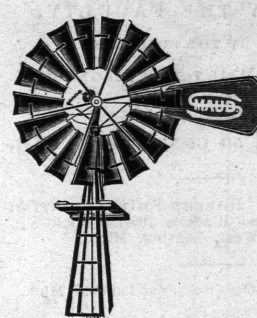
"An Arizona Cactus Garden" is the title of an article in a recent number of *Garden and Forest*, by J. W. Toumey, '89. Prof. Toumey has been engaged for the past three years in bringing together on the grounds of the University of Arizona all known species of this interesting family of plants indigenous to the United States.

THE RECORD has received from Prof. W. C. Latta, '77, superintendent of institutes for Indiana, his schedule of farmers' institutes for the coming season. Ninety-two institutes have been arranged for, and we notice among the "workers" three "old campaigners" in Michigan institutes, viz., J. H. Brown, Climax; A. C. Glidden, Paw Paw; and R. M. Kellogg, Three Rivers.

From the Michigan School *Moderator* we learn that the Galien high school, of which L. H. Baker, '93, is principal, voted for president, using the regular form of ticket. The pupils contributed two cents each and bought an oak picture frame, which they hung over the superintendent's desk. On each side of it they put a picture, one of McKinley and one of Bryan, and within the frame a clean sheet of white paper. When the results of election were known the successful candidate's picture was placed in the frame.

## The MAUD S

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## Industrial Education.

In education three objects are to be aimed at. First, ethical or moral culture; second, intellectual development and, third, economic or practical value. Children should be taught to have clear conception of right and wrong; should have consciences sensitive to all moral obligations and will power sufficient to restrain in time of temptation and to carry out the demands of a well-developed and highly enlightened moral nature. They should be taught that the mandates of feeling and conscience are to be revered and obeyed and that the whole being should bow in humble submission to the great principles enunciated in the Moral Law.

The happiness of the individual, the good of society and the welfare of the state demand that the moral element in education be not neglected.

This instruction does not usually occupy a place upon the school program. It is taught in a quiet incidental way, very often without any conscious effort on the part of the teacher. And this is the crucial test of teaching. Not how many pupils pass the required tests, although that in itself is good, nor how quiet and orderly the pupils are, however much this may be desired, but how much do they love the truth, what temptation can they withstand, what aspirations do they have to live noble lives and to be of some use to the world. The teacher who can touch life in this way has a qualification that surpasses all others. Character is the greatest qualification for any man or woman who has anything to do with the training of children at home, school or elsewhere.

The chief aim of education in the past has been intellectual development; the cultivation of the perceptive faculties, the storing of the mind with knowledge, and the strengthening of the reasoning powers. The intellect is but one part of the brain, yet it receives almost all the attention when the mind is considered educationally. studies have been pursued without any special reference to the other departments of the mind so long as they gave food for intellectual growth. A great store of knowledge and keen reasoning powers are ends to be sought, but they by no means embrace a complete education. Many men with such qualifications are tricksters, dishonest demagogues, and often criminals. The superintendent of one of our prisons said, "The greatest rascal I have in custody can write out our Lord's Prayer in seven languages." This

criminal had the intellectual but not the moral training.

### CONDITIONS HALF A CENTURY AGO.

At one time intellectual and moral training were all that was deemed necessary, but conditions have so changed within the last half century that our educational systems must change to meet these new conditions. What were the conditions a century, or even half a century ago? Fifty years ago our school system was unformed, and only a few communities had school more than a few months during the year. The great majority of people lived in the country. The boys worked with their fathers on the farm and the girls were busy assisting their mothers in taking care of the domestic duties where they were early in life taught to sew, cook and perform all other kinds of household work. The boys very soon in life were familiar with all the work of the farm. They soon learned to drive the team, to plow and plant; to use the tools and machinery of the farm. Both the boys and girls were in most cases acquiring the training which would aid them in after life. The boy, when he reached the age of twenty-one, was familiar with the operations on the farm and was an accomplished husbandman. The young woman at the same age was well equipped for assuming the cares and duties of the position in life which she in all probability would be called to fill.

The school education of each was of short duration, and perhaps of not a very high order, but they had served a long apprenticeship. They had many times been placed in trying positions and had so many times overcome difficulties that they had learned not to fear a task because it was hard. They had been trained to work; their industrial education while quite varied was of no mean order. It would have been folly at that time to have taken part of the two or three months spent in school each year for industrial work. The time was all too short to acquire the book knowledge and intellectual training which was deemed necessary even in those unpretending days. They could at best during the few weeks of school acquire only the rudiments of an education. While the terms are much longer, the other conditions are much the same in many of our rural schools today. The pupils in these schools receive considerable industrial work at home and cannot afford to give precious school hours, which are too few at best, for this work. It will be many years before it will be wise and practical to introduce much industrial work into rural schools.

But how the conditions have changed during the last half century? Instead of a quiet rural population more than half our people live in large towns and cities. In some states only about 20 per cent. of the people live on farms. Not so many people are needed now to carry on the farm work. Most of the land has been reduced from its primeval state and modern machinery has taken the place of the laborer. One self-binder comes into a neighborhood and twenty men lean on their cradles; the steam thresher comes puffing up the lane in the morning, long before night it is gone, and that long tiresome winter's job of flailing the grain has vanished. One man can now with the modern improvements do the work that required the time of three or four men half a century ago. The same is true in almost all our arts and trades. One nail cutter with his little machine does the work that required the hard labor of one thousand men a century ago. Fac-

ories have taken the place of shops. The cabinet shops, wagon shops, woolen mills and grist mills of half a century ago are almost all gone. The apprentice and master have given way to the capitalist and laborer. Modern invention and the combining of capital have made great industrial centers to which the rural population have gathered in such numbers that cities have sprung up as by magic, and instead of a people whose industries are almost exclusively agricultural, as it was half a century ago, we have become one of the leading manufacturing nations of the world.

### PRESENT CONDITIONS.

The city boy grows up usually without knowing what hard work means. In very few instances does he work with his father and learn his father's business. In most cases he grows up without any knowledge of the trade or business by which his father has earned his living.

Instead of two or three months of school during the winter, as was the case fifty years ago, now nearly the whole year is given up to school, and in addition to this pupils are given so much work to prepare outside of school hours at home that they have very little time to do chores or any other labor. Pupils are often better known to their teachers than they are to their parents, and in many instances the school seems to have a greater influence in the formation of character than does the home. Instead of labor on the farm or in the household and an industrial skill that makes its possessor independent, many of the youths turned out by our high schools are utterly helpless as far as earning a living is concerned. If a clerkship can be found, all is well, but if not the case is often pitiable. The boy is not lazy but his education has led him away from manual labor and given him a distaste for it. He would rather accept a clerical position at \$4 per week than to go into a shop or factory at wages twice as great. To think of donning greasy clothes and having his hands and face discolored with dirt gives him a fit of despondency at once.

If his education was intended to fit him to take hold of the active duties of life it is manifestly a misfit. As a scholar he can copy and keep books, but society needs educated mechanics much more than it needs clerks, and will give them equal honor, more independence and much more remuneration for their labor.

But what is wrong? The boy was all right when he started to school and his reports show that he has passed, successfully, all of his examinations. Could it be that his education has led him away from his environments? Let us see. In every day life "he is surrounded by the visible, tangible, constructive sides of this busy world—houses, stores, churches, factories, machines, processes, streets, waterways and railroads. Why should not a system of education hold some close relation to important sections of the world's activity as it does to those other departments where law, medicine and literary culture each plays its important part? Why should it not be kept in mind that the boy must earn a living after his school days are over, and at least part of his training be conducted with special reference to this fact. It is certainly the first duty of the school to prepare its students for life—productive, active and aggressive, and certainly that system of education which best fits its recipient for earning a living, honestly and respectfully, in-

dures to the family the best parents, to the state the best citizen and to the nation the best patriots."

What has been shown to be true of the boys is also equally true of the girls. Their education has not been such as to prepare them for the responsibilities of life. There is less excuse for this state of affairs with girls than there is with boys; for while boys may enter any one of twenty fields of labor, girls stand about twenty chances to one to enter the same field of labor.

In a leading woman's college in the east, quite recently, some benevolent scheme was attempted by organizing small circles of students to meet an hour each week, to sew, while one of their members was to read some interesting book. But the project failed. There were enough who could find the time, enough who sympathized with the purpose of the organization, and more than enough to read, and read to the edification of all; but here in this college of exceptionally well bred young women, with an immense store of ancient and modern learning, the benevolent scheme failed because the girls had so little skill in the use of the needle. But it is not only this class of women who are deficient in domestic training. A benevolent organization in one of our eastern cities endeavored to aid the families of the laboring classes during the present hard times by distributing among them good flannels and woolen cloth with which they could make clothing for their children. But to their great surprise they found that comparatively few women could make clothing for their children when the cloth was furnished them.

When sewing was introduced in the public schools of Boston and Philadelphia it was found necessary to employ specialists—not to supervise the work but to do the actual teaching. The average teacher in these and other cities seems not to know enough of this most common of all arts to be able to teach it to little children. How much does the average girl graduate of the grammar schools or high schools know about domestic science and household economy?

If the object had been to prepare them for a life of leisure rather than for a life of activity and usefulness their education would scarcely differ from the course of study they have been required to pursue. These studies, while from the ethical and intellectual standpoint have been of a high order, yet on the economic or practical side they amount to nothing, and when one of these girls becomes some man's delight and is asked to take charge of a home she must fall back on the unscientific and very meager knowledge that she has chanced to gather up from her mother or perhaps worse yet from some ignorant servant. Poor girl, she would gladly exchange her four years of Latin for the ability to bake a loaf of good bread. But you will say, "She can buy her bread," and that is just what she will do, and she will buy much else that will be very expensive. She has no idea of the comparative nutritive value of foods. She does not know how to purchase the best foods, and when they are purchased she does not know how to prepare them properly for use. The grocery and meat bills consume the earnings of the husband, and yet they never have a dainty, enjoyable meal. The home is far from what it might be. This state of affairs very often breeds discontent and leads to family broils and drives the husband to seek pleasure in the club room or saloon. Even if the husband should be a man of means the case is not much better. The wife will

be at the mercy of ignorant servants whose duties she does not possess the requisite knowledge to oversee and direct.

Most mothers would hesitate or probably refuse to give their daughters into the care and keeping of a young man who had no trade, calling or tangible means of support, but at the same time she will allow her son, often because she cannot help it, to take to himself a young woman as wife, who has no training or knowledge of the duties awaiting her in the most noble of all vocations open to women. The records of our divorce courts are filled with the recital of troubles that never would have materialized had the woman been as able to manage the economics of the household as the man was to earn a support for the family.

During these times of general depression we need not only better prices for our produce and better wages for our laborers, but above all we need to learn how to live economically and keep within our means. For the latter result the world must look mainly to the women. As the founder of Pratt Institute says, "The man who earns ten dollars per week will have a more attractive and happy home with a wife trained in household economy than a man who receives twice as much whose wife has had no training in domestic economy and thrift."

**INFLUENCES THAT HAVE MOULDED OUR PRESENT COURSE OF INSTRUCTION.**

But why has the practical part of education been omitted from our public school system? The history of education will probably throw some light on the question. As the great universities of Europe grow out of monastic and cathedral schools, so our older American colleges were nearly all the children of the church. The preachers were in the early days almost the only learned men, and therefore the only teachers. Naturally enough, as they were the founders and teachers these earliest colleges were devoted almost exclusively to the cultivation of theology, classics and philosophy. These parson-teachers taught what they held to be the only thing worth learning, and they were right in putting character and culture above everything else, though they were compelled to omit important elements of

**Official Directory.**

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.

M. A. C. Grange—Meets every three weeks on Tuesday evening in the Columbian Society rooms. Prof. C. D. Smith, Master. H. W. Hart, Secretary.

Natural History Society—Regular meeting second Friday evening of each month in the chapel at 7:00. H. C. Skeels, President. W. R. Kedzie, Secretary.

Botanical Club—Meets first and third Friday of each month in the Botanical Laboratory at 6:30. 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.

M. A. C. Athletic Association—C. B. Laitner, President. G. B. Wells, 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. E. A. Baker, 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. C. L. Weil, President. Mrs. J. L. Snyder, Secretary.

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### Industrial Education.

(Continued from Page Five.)

needs of the few who expect to take a college or university course, but to the many who are of necessity compelled to leave school often before the grammar school course is completed they offer no opportunity whatever for practical training.

#### PROGRESS IN INDUSTRIAL WORK AND WHAT SHOULD BE DONE IN OUR GRAMMAR AND HIGH SCHOOLS.

Very much has been done in industrial education in this country during the last twenty-five or thirty years. There are in the south as many institutions of higher learning giving work along these lines as there were higher institutions in existence in the south at the close of the war. Many prominent technical schools have been started and to many of our universities have such departments been added.

Nearly all our larger cities have added this work to their public schools, but only to a limited extent. Public sentiment is compelling this work to be taken up. People realize that at least, to some extent, the public schools should prepare pupils for the work of life. Above all, they are convinced that it is not the function of the public school to educate boys and girls away from labor. They realize that the school should educate pupils to work rather than to give them a distaste for it. The great bulk of humanity are doomed to earn their bread by the sweat of their brow, and instead of making pupils dissatisfied with their environments the tendency should be to keep them where they naturally belong, but to make them intelligent, skillful and happy in such vocations. It is all right for a bright pupil to break away from his environments and enter a profession or some other advanced field of labor, but it should not be made an object of the schools to prepare pupils exclusively for such fields of work. The schools belong to the people and should be kept close to the people with the intent of doing the greatest good to the greatest number. It is doubtful whether any city grammar school or high school is fulfilling its proper mission unless it offers some line of industrial work to its pupils. If it were left with me to fix the course of study for our primary and grammar schools, I would give mechanical drawing, and shop work to all boys over ten or eleven years of age, and to the girls between the ages of eight and twelve I would give sewing, and to those over twelve years of age I would teach cooking. Advanced work along these lines should be given throughout the high school course.

Manual training will do much for the boys in many ways; it is a good healthful exercise and will keep them in touch with manual labor. When they are through school if it is necessary to enter some factory or shop they will not hesitate to do so, whereas if they are allowed to grow up without this training it is very difficult to entice them to take up any line of work which implies hard manual labor.

It is claimed, of course, that our public schools already do not have time to teach well all that are on their programs. This perhaps is true but the universal verdict of all schools in which manual training has been made a part of the work is that pupils will spend four or five hours a week in the shops without any material effect upon their studies. A few years ago all England was startled with an official report giving the number of boys between ten and fourteen years of age who were employed in their factories.

An effort was made to give these boys an education, and a law was passed by which these boys were compelled to attend school half of each day. It was soon discovered that the boys who worked one-half of the day and attended school the other half were making even better progress in their studies than those boys who attended school the full day. Boys become interested in this work and thereby are enticed to remain in school longer than the boys who do not take such work, and very often they are led to form a taste for some special line of work, or are able to discover the calling or trade for which they are best adapted. The dull boys realize very often that although they are not good in their studies yet they are good for something and it gives them an energy and zeal which lifts them to a higher plane of action. But above all, the purely educational value of such labor is very great, and this feature alone has been the means of placing it in many schools. It has been demonstrated, and is now accepted as a sound pedagogical principle, that manual labor increases brain power and thereby makes it possible for a pupil to do better intellectual work. The experience of almost every teacher verifies this theory. It is not the indolent, lazy boy, but the active pupil whom we expect to make the best progress in his studies.

The value of this work in sewing and cooking to girls is simply incalculable. It has a direct bearing on all their life work. If a young woman is a good seamstress and understands thoroughly the science of, as well as the art of cooking, she certainly is well equipped to meet the trying battles of life.

It is not intended that industrial work should take the place of intellectual training but it is urged that it should have some place in our system of education. At one time the ethical and intellectual culture and training were deemed sufficient, but in this industrial age, when pupils see so little of home life, and receive so little training from their parents, it is very necessary that they should be equipped for meeting the responsibilities of life, and in what better way can this practical training be given than in our public schools.

#### Domestic Science.

AMY B. VAUGHN '97.

The object of all education is to prepare men and women for the duties and pleasures of life. If purely intellectual training secured these ends, there would be no need for technical training, but in all countries the majority of people must labor with hands as well as brains, and when the hand and brain go together the work must be satisfactory.

Twenty years ago the question of training girls for household duties was yet in its infancy, and when people became interested in this question and tried to introduce the subject into our institutions of learning, serious objections arose. Two of the strongest of these were: First, that this kind of training would lower the standard of intellectual education, and second, that these institutions were not to teach a trade, that they had no time for this, that there was too much other work. But all objections are being gradually overcome, and into many of our schools and colleges, side by side with the various other studies, has come this course of domestic science.

As taught in our Agricultural Colleges of today, this course includes instruction in regard to the situation of our homes, proper ventilation, the furnishing of the home, cooking, care of the health, and sewing.

Housekeeping has become a science. The profession of housekeeping is one of the highest. Whatever art or accomplishment girls may acquire besides, let them consider that the management of a household is not to be despised.

First in regard to the situation of our homes: We must know that the grounds can be well drained and we must see that pure water is accessible. Then we must see that this home of ours has means for proper ventilation. There is so much of God's free, fresh air around us, and yet the many homes of this land are not properly ventilated. This must be remedied.

The art of home furnishing, too, is essential; the home must be made beautiful and attractive.

Next come the lessons in cooking. Cooking is no longer guess work, there is a right way and there is a wrong way. Ruskin says, "To be a good cook requires the economy of our great-grandmothers and the science of the modern chemist." There is such a lack of knowledge, even among experienced cooks, of the nature of food and its proper combinations, and much unwholesome cooking has been the result of this ignorance. To remedy this, instruction in cooking has been introduced into our schools, thus giving the girls some knowledge of the chemistry of foods.

In this connection come lessons in economy. A loaf of bread that is burned or allowed to mould brings no return, but is so much value thrown away. If a family consumes at one meal more than is necessary to keep them in perfect health, that much has been wasted, or even worse, it causes disease. What an excellent motto for the kitchen would be Shakespear's words: "He that keeps nor crust, nor crumb, wearied of all, shall want some."

Much of the sickness of this world is caused by unwholesome cooking. We cannot expect good-tempered and highly-moral people from a race which eats badly-cooked food that is irritating to the digestive system. And so right in line with the cooking lessons comes the care of one's health. We are shown the necessity of strict obedience to the laws of health, for the laws of health are the laws of God and are as binding as the decalogue. It means so much that the girls, the future home makers of this land, should be trained along these various lines, for the prosperity of a nation depends on the health and morals of its citizens, and the health and morals of a people depend on the food they eat and the homes in which they live.

Although Michigan has the oldest Agricultural College, it has not been the first to introduce this domestic science course, but it has come at last and it is surely welcome—welcome because it is going to broaden and increase the intellectual powers of women. It is going to make brighter homes. It is going to cast abroad an influence, an influence that will be felt for good, for as the girls leave this institution after finishing their course here, others will see their good work and be benefited by it. Then, too, this course is fitting the girls for their life's calling, the care of the home. Many homes will be made brighter and happier for the instruction received here.

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**Wayside Trees in the Country Highway.**

The following by C. W. Garfield, '70, in the *Michigan Cyclist* gives some valuable suggestions for artistic effect in country road building. If those who follow the suggestions of Hon. G. D. Crippen, who had an article in the issue of October 20 on "Roads," would also keep in mind this artistic effect, there would be fewer lonesome, dreary stretches of country road:

"There is nothing gives a greater charm to a country highway, once having a good roadbed finished, than the wayside trees. The satisfaction of the cool shade on a warm day is but a small part of the enjoyment to be derived from the sylvan border. Still the creature comfort should not be neglected in the argument for planting trees along the roadside. The pleasurable sensation one absorbs when looking adown the street bordered on either side by a row of stately trees, so well trained as not to have a break in the line, is one well worth a long ride or walk to obtain.

But to one who has an artist's appreciation of scenic effects the keenest pleasure is derived from a natural arrangement of the trees that embellish the highways, hence the attractiveness of the country roads along which for a generation the farmers have allowed the various species of trees to grow up at will in the corners of the rail fences.

"Nature is no mean artist in the arrangement of trees in groups, if she is not meddled with too much; and while many a farmer is called shiftless because of the unkept appearance of his fence corners, and the mentors of the agricultural press ring changes on the advice given to maintain clean, well kept borders to the farm, we have the men to thank who neglect to profit by this counsel for a great deal of our wayside beauty.

"To besure many of the succeeding generation, with the cleaning up spirit dominant, have scattered ruin in their wake by making a complete elision of what nature had arranged as a matter of ornamentation to the farm and an attraction to woo the pedestrian and please the traveler. Yet in many places the natural groupings have been retained and thus real value saved to the premises and pleasing character preserved to the roadside.

"We cannot emphasize too strongly the importance of studying the beautiful effects produced by the naturalness in arrangement of roadside planting. The regular distance planting has so many trials to encounter to attain perfection in results, that it is almost impossible to attain approximately the symmetry we seek. A single break destroys the harmony and makes a blemish that cannot easily be hidden.

"On the other hand, in arranging plantations in groups a failure or an accident is not apparent, and can at any rate be easily mended, because there is so great a variation of perfected results.

"A single tree or a cluster of burr oaks, through some accident, may be destroyed and soon the growing branches fill the vacancy and really no loss is experienced.

"There is a practice quite common and reprehensible in the extreme, which seeks to destroy this natural grouping of trees in clusters, by selecting individuals at as near regular distances as possible, and removing the remainder in imitation of the artificial method of planting. This is unsatisfactory at least, because as a copy of the regular

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system, it is noticeable principally for its failures and trees selected from groups and divested of their supporting fellows, make a sorry appearance as individuals.

"The sky outline of a group of roadside trees is an important element of beauty. And a combination made up from one's knowledge of individuals is often disappointing, while another arrangement of species which one would not commend, not having seen it, proves very satisfactory. We have in mind a group consisting of a wild cherry and a sugar maple which stands at the foot of a hill and makes a very desirable combination of foliage and a wonderfully attractive sky outline. The American elm is generally commended for its beauty as an individual; still we recall a group in the corner of a field where two roads intersect at right angles, in which a fine elm is the central figure and is supported by a cluster of burr oaks, the whole making a very artistic group with fine outlines, both in summer and at the season when no leaves adorn the branches.

"Winter effects in roadside trees are well worthy of consideration in our northern climate. One not thoughtful or observing can scarcely imagine how surprisingly attractive the framework of trees is when outlined upon the sky, nor how great diversity in individuals and species can be secured by discreet selection, and not in any wise depreciate the summer beauty."

**Then and Now.**

In the days of old,  
When knights were bold  
And chevaliers were gay,

To kiss a miss  
Were counted bliss,  
As poets used to say.

But now-a-day  
"Germs" are the craze,  
And science holds full sway.

To kiss a miss  
Is dangerous bliss,  
Wise scientists do say.—*Ex.*

Heard at the phone in the Library building, during the dinner hour: "Hello, central, Abbot Hall, please. Hello, hello, is this you? Too bad you didn't get that gun. Yes, — —. How did you like the roses? — —. Yes, all right, goo'by."

Asked a female lecturer impressively: "What are the things that touch us most as we look back through the years?" There was a moment's awful pause, and then a small boy in the audience answered: "Our clothes."—*Texas Siftings.*

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