FARM AND GARDEN

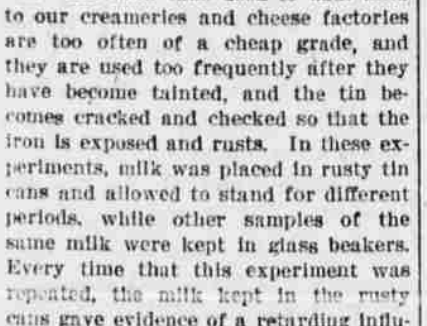
Rusty Milk Cans.

"Rusty cans and their effect upon milk," is the title of a very valuable bulletin of the University of Wisconsin Agricultural Experiment Station. Experiments indicate that milk hauled in the poorly tinned or rusted cans is materially injured for cheese making, for in addition to the retarding influence of the iron on the rennet action and the neutralization of the acid by the iron, it also produces taints or off-flavors. The milk cans used to haul milk to our creameries and cheese factories are too often of a cheap grade, and they are used too frequently after they have become tainted, and the tin becomes cracked and checked so that the iron is exposed and rusts. In these experiments, milk was placed in rusty tin cans and allowed to stand for different periods, while other samples of the same milk were kept in glass beakers. Every time that this experiment was repeated, the milk kept in the rusty cans gave evidence of a retarding influence on the rennet as compared with the milk kept in the glass beaker. Milk which was allowed to stand in iron utensils for several hours had a peculiar bluish color, indicating the presence of iron in the solution. It was evident that the acid in the milk acted upon the iron and dissolved some of it. The maximum quantity of iron dissolved in the milk ranged from 1 to 1½ pounds for every thousand pounds of milk.

The Bulletin urges that the maangers of cheese factories and creameries see that the operator is a reliable man, who will not only practice cleanliness, but will insist that the factory utensils and those of the patrons are in first-class condition. He advocates the use of only such cans in which heavy steel is used that have been well tinned, similar to those used in Europe. Experience has proven that the cans of the best quality, even though they are quite expensive, are the most economical in the long run.

Heating Water for Hog Killing.

A device which is superior to the old iron kettle for heating water is shown in this sketch. Take a piece of 2-inch pipe 8 feet long and have it



SIMPLE WATER BARREL.

securely screwed into the bottom of a stout vinegar barrel. In the other end of the pipe screw a large wooden block.

By arranging the affair as shown in the sketch water in the barrel will be heated rapidly and can be removed as desired without bothering the fire. Do not make the mistake of putting a metal cap on the end of the pipe or the steam may sometimes burst the piping before the cap will come off. The wooden block acts as a safety valve and will fly out if pressure is too great.

Here is another handy arrangement for heating water when killing hogs, cooking small potatoes for stock, etc. A heavy bar, such as the track of a hay carrier is fixed in the top of two posts and the pulley runs upon it, which carries the lever with which the pot can be lifted. A small brick furnace will get the most out of a fire, as the pot sets into a round hole on the top and receives the full benefit of the heat.—Farm and Home.

POT DERRICK.

Study of Windbreaks.

An effort to determine the value of windbreaks on farms is being made by the Forest Service of the United States Department of Agriculture. At present windbreaks are planted haphazard and many do not believe in them, so it is time we had some definite information on the subject. If there is a particular kind of tree that makes a better protection to crops without doing any harm we should know it. The Forest Service proposes to find out just how much, if any, and when windbreaks increase crop yields. Instruments will be used to measure heat and cold, moisture and dryness, both above and below ground; to register the force of the wind near the windbreaks and some distance away; to measure light intensity and take note of the effects of shade; to register frosts at different distances from the trees and to keep account of the effect of windbreaks on the snow which covers the ground to leeward in winter. Many other measurements and tests will be made and elaborate data will be collected by experts who will have charge of the investigation. Corn will be the first crop studied behind windbreaks. Corn is a particularly good crop to experiment with because it is easily injured by hot, dry winds, will not stand shading and is very sensitive to frosts.

If it is found, as is generally supposed, that windbreaks are a decided advantage to crop yields, it will be an easy matter for the farmer to plant trees in his fence rows or along the sides of his fields toward the prevailing winds and thus protect his crops as well as produce a valuable crop of timber. In view of the fact that our timber supply is rapidly waning, it stands every farmer in hand to plant some trees and to maintain the wood lots upon his farm, so if windbreaks can be used to advantage, he can easily make the trees he plants serve a double purpose. The results of the investigation will be awaited with interest.—Farmer's Guide.

Farm Fowls.

Fowls on the farm should in the very nature of things be the most profitable of all fowls. They cost little to feed and the space they range over costs no more on account of the presence of the fowls. Most of them have free range and forage for their food; this is profitable for the owner and enjoyable to the fowls.

Most farm flocks are too small. They might easily be increased in size with little effort and small expenditure. It has been said that a fowl will pay a dollar a year clear profit under such conditions as prevail on the average farm if they are rightly housed and cared for. This is surely large enough a profit to be interesting to any farmer. Usually the farm fowls do not get credit for all they really do, for the farmer seldom figures in the eggs and other poultry products used by his own family, which make quite an item in the course of a year.

Not only the quantity should be increased, but also the quality. There are vastly greater possibilities for profit in pure-bred fowls than in scrubs. They look better, weigh and lay better, and really are better in every way.—Agricultural Epitomist.

Where Our Vegetables Originated.

In 1585 the potato was introduced into Europe by the Spaniards, who found it in Chile. At almost the same date it was introduced into England by the English, who had found it cultivated by the Indians of North America. The sweet potato and the artichoke are also American vegetables. Salsify is found growing wild over Greece, Italy and Algeria. Turnips and radishes came originally from Central Europe. Cabbage, which is of remote origin, is believed to be a European vegetable. Asparagus found its origin in temperate Western Asia. Eggplant came to us from India. The carrot grows wild throughout Europe, Asia Minor, Siberia, China, Abyssinia, North Africa and the Canary islands. The tomato comes from Peru, the cucumber from India and the pumpkin from Guinea.

Celery and Celeriac.

There is a special turnip-rooted form of celery known as celeriac, which produces a large root and very small leaf stems. This is more suitable for cooking than the common celery.

Poultry Items.

Lice are the cause of death of more half-grown turkeys than from any other cause.

Foul yards are great sources of disease. Fowl diseases are also caused by foul coops and foul drinking vessels.

Make the entrance to the nests from the back to make them dark, and make them big enough so the hens can get in and out without breaking the eggs.

Almost any breed of fowls may be kept within bounds if rightly treated, even though it is much easier to confine large breeds than smaller ones.

No one wants eggs that have been washed; they don't look right. To get a good price for eggs they must be naturally clean as well as fresh.

Overcrowding or confinement in unhealthful quarters causes diseases among poultry. This, however, is not excusable on the farm. There is plenty of room and sanitation should be perfect.

Corn is not a good feed for poultry that is kept in yards too small to grow green stuff, but it is the very best feed for fowl when they are on pasture, where they get plenty of insects and clover to pick at.

Loss or waste is one of the great drawbacks in the poultry business. Waste should be prevented, and every pound of feed should be made to produce the greatest possible gains. Cleanliness is one-half the battle in preventing loss. Keep everything about the yard clean and much loss will be stopped.

MYSTERY of MOVING PICTURES.

How the impossible is made possible and fairyland made real by the makers of the photographic films for Kinetoscopes. A wonderful business which has grown from nothing to huge proportions in a few years.

Did you ever come out of a moving picture show with the feeling that you had been "dreaming dreams?"

There is nothing that so thoroughly combines absolute mathematical exactness with fantastic unreality as the modern entertainment known as a moving picture show. There is nothing that requires more scientific and artistic skill in the making or more care and dexterity in the reproducing than the pictures shown by the kinetoscope, and there is nothing more mystifying to the beholder than these same pictures, when they are thrown on the screen in the theater. In the same afternoon, perhaps, you will see a thrilling train robbery, a prize fight, a dainty little domestic comedy, a scene during a trip of one of the presidential candidates, a fairy tale of your childhood, and some of the magical pictures in which stones roll rapidly up hill, saws and hammers work without human assistance, or a skeleton gradually develops flesh and clothing. The commonplace is so mixed with the impossible that while you are looking at the pictures you find yourself believing it is all perfectly real and natural, and it is only after you have left the theater that you realize it is a trick, an optical illusion, and you wonder how it is done. The effect upon your mind is much like that produced by a dream you have had, only in the case of the cinematograph you try to analyze the process.

Behind the Scenes.

But the process is unanalyzable, unless you are permitted a peep behind the scenes of the business of film making. Once in the film maker's studio, however, you find the making of the pictures far more interesting than the pictures themselves. One moment you laugh at your own stupidity in not guessing "how it worked." The next you are lost in admiration of the cleverness of the film makers in being able to arrange the natural and ordinary means about them to produce such extraordinary results. And you never see a moving picture afterwards without remembering how it, or one like it, was made.

Art, the drama, nature, mechanical forces, all have a part in the production of the pictures that are reproduced all over the civilized world, for the moving picture show has become the most universal of all amusements. Every manufacturer of motion picture films maintains a large company of actors, a theater of his own with an immense stage fitted with traps, tanks, lift and other usual scenic accessories, and a larger corps of stage carpenters, scene painters, scene shifters and property men than is thought necessary in any of the first-class theaters in Europe or America. All sorts of ingenious methods of producing unusual effects, all the devices for creating realistic illusions known to the stage and many that are impossible on the real stage, are employed. Every kind of scenery and stage setting are used. People of all ages, sizes and conditions, "the lame, the halt and the blind," as well as the physically perfect, take part in the various scenes. Sometimes the actors play their parts on a real stage, sometimes they act in the fields or woods or even on the streets of a city, and sometimes they go partly through a performance in the midst of natural surroundings and complete the play on the stage of a theater, or vice versa. It all depends on the subject of the picture and the way the idea is worked out.

Dramatic ability of a high order is necessary in the actors who pose before the speeding kinetoscope, for acting alone must tell the story of the play they are presenting, and many of the subjects are too artistic to admit of mere pantomime as an exposition of their meaning.

Trick Pictures from France.

The kinetoscope is not a French invention, but its development along artistic lines is due almost entirely to French ingenuity. In England, and in America till quite recently, it was used merely to record events as they occurred, such as the unveiling of a monument, the inauguration of a president of the United States, a boat race, a prize fight, a championship baseball game, or a great parade. No attempt was made to create subjects for the machine to photograph, and all fanciful pictures, color pictures, or others that were out of the ordinary were left for the French film makers to produce, and the result has been three distinctively characteristic classes of motion pictures

England produces the "current events" films. She sends her kinetoscope operators wherever great things are happening. She had one in the trenches at Casablanca, another in Constantinople when the Sultan proclaimed the constitution, another in Australia when the American fleet visited that colony. When King Edward opens an exposition the entire performance is recorded by the kinetoscope, and reproduced somewhere else later. America makes "current events" films, but she also makes others. Film makers in America maintain their own theater and company of actors, and some of the best picture dramas and farces now shown have been produced here. The French manufacturers produce all the kinds of films made in England and America, but they make the colored pictures and the trick pictures in addition, and on that account their work is more interesting to the uninitiated than that of either English or American manufacturers.

An Example of the Method.

Everybody knows how a moving picture camera photographs a ball game or a prize fight. The film, which is just like any other photograph film except in size, passes over the aperture through which the exposure is made at the rate of about 1056 pictures to the minute, recording every motion of every object within range of the camera, while it is passing, and sometimes consuming half a mile of film in a single record. But everybody does not know how the picture of a man who is run over by an automobile and both legs cut off, and who afterward replaces his legs and walks away on them is made, nor how the siren who calmly swims about under water during a twenty minute picture could have remained below the surface long enough for the photographs to be taken.

In the case of the man the picture was made by the "arret," or stop. In that of the siren the "fundu," or blend, is employed. Both of these are French discoveries, and both are all important in the making of any moving picture films that are not strictly record films. In the "arret" the machine is stopped at some definite point during the exposure of the film and the shutter closed so that registration is impossible. A change in some portion of the object being photographed is then made, after which the operation of the machine resumed. The "fundu" is produced by a double exposure of one film, or by doubling the film by superimposing one film upon another for reproduction.

The first is exemplified by the well-known picture, the "Happy Accident." A man falls asleep on the roadside and while he sleeps a motor car runs over him and cuts off both legs at the knee. The motorist discovers his carelessness too late, but stops his machine at once and, hurrying back to the injured man, picks up the severed legs and hands them to him. The victim of the accident replaces his legs and after shaking hands with the motorist walks off up the road.

Photographs of the Impossible.

Of course the thing is impossible, ridiculously so, but the pictures shown on the screen are the reproductions of actual photographs, and the puzzle to every one who sees the film is how can there be a photograph of a physical impossibility? The trick is not a difficult one after the right man is found to pose for the photograph. A man who has both legs off at the knee and uses artificial legs in their place was made up to look like another man with two good legs, and these two men changed places in the photograph. The actor comes on the stage first and goes to sleep by the roadside. The registration of the film is then stopped and the man with the artificial legs takes the actor's place, being careful to assume exactly the same position as the actor. Then the machine is started again and the picture is made of the automobile coming down the road, running over the sleeping man, the motorist getting out and going back and giving the injured man his legs. At this point the machine is again stopped, the legless man gets out of the way and the actor takes his place. When registration on the film is resumed there is apparently no break in the scene, and the little tragedy is finished without difficulty. But the effect produced by the two stops is thoroughly startling to the beholder of the reproduction.

Fairy Pictures.

One way of producing the blend is doubling the film, and this is the method most often adopted when supernatural appearances or disappearances are depicted. For example, a fairy appears to a child, talks a moment, and then disappears. First, a film of the scene, with the child in the foreground, is taken, the object being gradually thrown out of focus as the registration proceeds. Next, a film of the scene and the child with the fairy is taken, out of focus at first and gradually brought into focus. Then the two films are placed one upon the other so that they register exactly, and the result is the apparent gradual materialization of the fairy out of nothing. The fairy is, of course, much smaller than the child in the picture. In reality they are about the same size, the apparent difference being due to their respective distances from the camera.

In the cases of apparent defiance of natural laws, such as stones running up hill and jumping into open windows, or people walking upon the ceilings, the effect is produced in a different manner. The exposures are taken in the usual way. The stones fall out of the window and roll down the hill, and the people walk on the floor like civilized creatures while they are being photographed. But when the reproductions are made the films are carefully reversed, run backward, as it were, and the result is the reversal of the action part of the picture. This is a simple trick enough, but is hard to understand unless you have seen it done, and is one of the most puzzling of all the many illusions of motion pictures.

A Girl's Vision.

"The Errand Girl's Dream" shows another way of working a little trick on the audience. In the first scene the girl is shown leaving her home to go to the shop where she is employed. In the second scene she is shown at work in the shop and afterward starting out with a big box to deliver some goods to customers. These two scenes are shown with their natural backgrounds, having been taken without preparation in typical sections of Paris. But after the girl starts on her errands the operator of the kinetoscope leaves her and returns to the theater, where he finds an actress made up to look like her and a scene painted to represent the street through which the girl is likely to pass.

In this scene the actress is sauntering along the street. Seeing a bench, she sits down, places her box beside her, and is soon lost in day dreams. Suddenly the box opens and out of it comes a party of fairy creatures who bow prettily to the girl, and then jumping down, go through a merry dance. There is more to the story, but this shows the trick.

When the girl sits down on the bench the film is stopped while the real box is removed and a piece of scenery painted to look like it is uncovered. This is opened from within in such a way that it seems to be opened by the fairies. The apparently diminutive size of the fairies is produced by placing them 30 or 40 feet farther away from the camera than is the girl, and as they are seen through the opening which the spectators regard as the lid of the box the illusion is complete.

Most of these tricks are accomplished much as similar illusions on the real stage are produced except that the illusion is the more perfect in the moving picture because of the possibilities of a change of properties which the "arret" provides, but the ability to set the scene and produce the effect is based upon the same sort of knowledge and skill that is required in properly staging any theatrical performance.

Mechanically, the kinetoscope is becoming rather well known. The pictures are taken on a sensitized film, 1⅜ inches wide, and varying in length from 100 to 1,200 feet. The film passes in front of an aperture 1 inch by three-quarters of an inch in size, stops dead still for the fractional part of a second, and passes on, the process being so rapid that at the normal rate of speed of operating the machine, sixteen exposures are made every second of time.

When these pictures are reproduced and passed through the machine which projects them upon the screen, they are usually shown at exactly the same rate of speed at which they were taken, and thus the natural effect is produced.

In showing the pictures the film, which for reproduction has been changed from a negative to a positive and probably colored in the same way that ordinary lantern slides are colored is passed from one reel to another over an aperture of the same size and shape as that through which the picture was originally taken, and the enlargement of the projected picture is accomplished by means of lenses in front of the picture. Light is furnished by electricity and, as in all stereopticons, passes through the picture into the lens, where it is refracted to form the great spot of light upon the screen. It is the manipulation of this light that is the dangerous feature of moving pictures. The film is celluloid and highly explosive, and the point of light that falls upon it is so intense that if permitted to rest for a single instant upon the film, the heat produced will cause an explosion. While the film is moving there is no danger, but it cannot be stopped without danger, unless the machine is fitted with an automatic shutter, which falls over the aperture as soon as the crank stops turning.