# Rural Economy.

## THE COW.

The milch cow is, so to speak, a highly artificial animal; she is, to a great extent, what her breed and keeper made her. In a state of nature, the cow gives only sufficient milk to nourish her offspring; in the stall and barnyard of a good dairyman, she yields it all the year through; and in extreme cases, in quantities almost exceeding belief.

More attention should be bestowed upon the milch cow with us than upon stock intended for the yoke or shambles. On the rich diluvial pastures of the West, beef is a prime object; with us, milk. Milch cows may be indefinitely improved by proper care and feeding, whatever their breed. Let the Middlesex farmer, like his brother farmer of the dairy shire of Ayr, breed cattle exclusively for dairy purposes, and in time, by judicious selections, he will have a native breed that will yield him all the return he can ask. It is said that an Ayrshire cow has been known to produce over ten imperial gallons of good milk per day, and one cow yielded her owner, in seven months, milk that sold for $257.

It is well known that the great utility of blood stock consists in the fact that they transmit their good qualities, without fail, while all is accidental and uncertain with native or scrub stock; each individual stands on its own merits.

Good milk is a most important article—it is a benison to childhood; while bad milk is as fatal as the sword of Herod. Its ingredients are water, butter, sugar, caseous matter, and various salts. The butyraceous matter gives it richness; the caseine, strength; the sugar, sweetness; and the water makes it an agreeable drink. Altogether, it is both a delicious food and drink, when distilled from the lacteal glands of a high-blooded, well-kept cow.

Milk drawn from the cow in the morning is thought to be of better quality than that of the evening; and a remarkable difference is perceived in the proportion of cream in the first and last portion of milking, the latter containing twice as much cream as the same quantity of the former. Dr. Hassall thinks that the average of pure milk does not exceed nine and one-half per cent. cream.; that delivered in Boston will rarely yield over eight per cent. When milk is carried far by rail, or in a wagon without springs, a portion of the cream is apt to be converted into butter, and sink to the bottom of the can, from which it is not taken, in the ordinary manner of supplying customers in large cities.—*P. Lawson.*

## PROTECTING THE WHEAT PLANT.

All experience teaches that over a great portion of our country the wheat crop is liable to be seriously injured by our severe winters. In very extended sections this was the case with the wheat sown last fall. We doubt if farmers have exerted themselves to prevent failures from this cause, too often considering it a matter entirely beyond their control. They sow wheat year after year, but always with a fear that a long, severe, changeable winter will deprive them of a crop.

As a protection, the *Prairie Farmer* recommends the following: A top dressing of manure or compost spread over the wheat field late in the fall or in early winter, will be exceedingly effectual in keeping the plants sheltered from winds and frosts, at the same time the land is benefitted by the manure. This it may not always be convenient to do. To those thus situated we would recommend the sowing of buckwheat or oats with the wheat. If oats, say 1½ bushels per acre, broadcast, just before drilling in the wheat, if the drill is used. Such a course will prevent the dirt from being blown from about the tender roots, thus preventing the frost from throwing out the plants, and in spring the mulch rots, affording them nourishment. This is no idle theory, but has the practice of successful farmers to support it. We cannot urge its adoption too strongly. Those who practice sowing oats or buckwheat are in the habit of sowing early, that a good growth may be made before winter sets in.

## CUTTING TIMBER FOR FENCING.

A correspondent of the Germantown *Telegraph*, who was brought up in the belief that the old of the moon in February was the best time for cutting timber for durability, and that fence posts ought to be seasoned, says he has learned by dear experience that both theories are wrong. He prefers to cut when the tree is full of sap, and to set posts when green. Rails cut when the sap is running, and the bark immediately removed, will last one-fourth longer than if cut at any other time and the bark left on. He has found that posts made from the limbs and upper part of trees always last the longest. Instead of banking dirt about a post, he would make a hollow or ditch around it to catch and hold water, believing that as water excludes the air, the longer it remains about the post the better. He says:—

"I had posts made from the body of a large chestnut tree that grew by itself; it was cut about the middle of April, made into posts, and put up without seasoning. They generally stood about twenty years; at the end of thirty years the last of them were taken up, and were then not entirely rotten. Again, I cut a white oak in the beginning of May, when there was a full flow of sap; their general durability was seventeen years; and some of those made of the limbs were taken up after they had stood twenty-two years, and were not yet rotten.

"Again, I cut another chestnut, and eighteen feet from the stump I made a gate post of the body, peeled off the bark and planted it while yet green. The post has been standing since 1811, and it shows no signs of being rotten except a small hole in the top of it. I cut another thrifty white oak at the standard time of February, and planted the posts the spring following. The ground in which the fence was set, in all three classes, was alike. At the end of six years, from planting this batch of posts, there were so many of them rotten as to be easily broken off even with the top of the ground. I have not been in the practice of waiting for posts to season, before they are used, though it sometimes happened; but the result was always in favor of the green posts."

## RINGBONE IN HORSES.

During a residence of over fifteen years in the State of Wisconsin, I have met with a great number of cases which generally pass under the name of ringbone. Very many of those cases were not, strictly speaking, ringbone, but what are termed, in technical language, cases of *anchylosis*, either of the superior or interior pastern bones or joints. I have also met in my peregrinations almost as many bipeds who pretend to cure such cases. Now let us examine into this matter and see what are the chances of such cure.

Anchylosis is a stiff joint arising from the intimate union of those bones which form the joint. Anchylosis is distinguished by true and false. In the former, the bones have grown together so completely as not to admit of the slightest motion taking place between them; while in the latter, the motion is only diminished, not destroyed. Anchylosis in horses is not unfrequently a consequence of wounds or bruises, which, causing violent inflammation of the interarticular cartilage, and an ossification in the arteries which nourish the joint, by which means bone is generated in lieu of cartilage, and anchylosis is the result.

Complete anchylosis of a joint renders it utterly and absolutely immoveable, and no mortal hand can restore it to its original state; yet, in the face of this fact, we find that almost every village and cross-road contains some bright genius who has found the way to humbug you out of your money, in making you believe he can cure what is absolutely incurable. I ask you to set your faces against such ignorance and barbarism. Can nothing, then, be done by science to help these cases of ringbone? The answer is, Yes; let every farmer be careful not to breed from a sire or a dam that is afflicted with the ringbone, for we know that like produces like, in very many instances. Young horses get ringbone very frequently from runing and jumping, and are not noticed until it is almost too late to avoid the bad consequences of neglect in not seeing to them. Should any of them appear the least lame, or should any enlargement, however small, appear between the fetlock joint and the hoof, it should be immediately attended to, for in the early stages ringbone can be successfully combatted, and only then; for if any enlargement in the parts I have indicated is suffered to increase, it will ere long bid defiance to the skill of man to restore it to its original integrity. Should any remain unconvinced, and attempt the cure of what is demonstrated to be incurable, they are more to be pitied than blamed.

Should any shining light wish to illuminate the arena of veterinary science, let him step forward and restore a case of complete anchylosis in the horse to its original state, and gain for himself immortality, or what is more tangible, two hundred dollars as a reward for his genius or smartness, which I offer to any one, at any time.—*A. T. W., in Northern Farmer.*

## ACTIVE MANURE.

One of the most active manures, and readily within the reach of most farmers, is a mixture of leached ashes and night soil mixed with fine soil. Let them be thoroughly worked over on a smooth spot, and allowed to stand a week before using, working it over every other day, and you have a most valuable manure, at a trifling cost of time. A handful of this mixture in a hill is excellent to give corn a start. Potatoes and garden vegetables generally feel it very quick. Hen manure is an excellent ingredient in such manures, but it should be well slaked with water before mixing with other substances. In this climate we have quite often a cold week or two in the first of June, when corn and tender vegetables suffer severely. We know no better way to keep up the courage of plants at this trying season than by the use of such manures.—*Maine Farmer.*

## BEAUTIFUL EXPERIMENTS.

Fill a wide-mouth glass jar with water, and cover it with a piece of "foundation", (the ladies will understand this), cover that over with a layer of peas, pressing it down so that the peas will lay in the water. They will then swell and sprout, the roots growing down into the water, their fibres presenting a beautiful appearance. Set this in the window, and vines will grow up, which can be conducted to the sill. The whole is very handsome.

If an acorn be suspended by a piece of thread to within half an inch of some water contained in a hyacinth-glass, and so permitted to remain without being disturbed, it will in a few months burst and throw a root down into the water, and shoot upward its tapering stem, with beautiful little green leaves. A young oak tree, growing this way, on a mantle-shelf of a room, is a very interesting object.

## CREAM.

A correspondent of the Boston *Cultivator* has been investigating the proper form for vessels in which to place milk from which it is intended to collect the cream. He tried numerous experiments with vessels of various shapes, and came to the conclusion that the shape of the vessel had nothing to do with the production of the cream, the amount of cream collected being always in proportion to the quantity of milk used.



# Scientific.

## NATIONAL ACADEMY OF SCIENCES.

This body held its annual meeting for 1866 in Northampton, commencing August 7. We give an account of its most important proceedings, following the reports in the New York *Tribune*. The last paper of the first day was by Prof. Agassiz, on

TRACES OF GLACIERS UNDER THE TROPICS.

It embraced the result of his explorations in the Valley of the Amazon, and gave many most interesting statements as to the traces of glaciers there found.

Prof. Agassiz spoke of the first observations made in Switzerland, showing the much greater extension in ancient times of the Alpine glaciers, which filled up the whole valley between the Alps and Jura, and rose to the height of 3000 or 4000 feet against the latter chain. In making these observations and deducing their results, Prof. Guyot had done much the greatest share of the work, without receiving due credit. Here his (Agassiz's) own part in the work began. He did not believe that this extension was due to local causes, and went to searching for traces of like glacial action elsewhere. He found abundant evidence that Britain had once been covered with continuous glaciers, as is Greenland now, and, after a long and hard fight, the English geologists had fully accepted the truth. He had found evidences of the same action in this country as far south as South Carolina. The whole north of the globe had been covered by a mass of ice down to as low as latitude 32°, always pushing southward, not from the sloping of the land in that direction, but because the supplying mass of snow accumulated in the north, and pushed outward. He had gone to South America, prepared to look for signs of ice there, and had found them. There were no glacial scratches there, as the upper parts of the rocky strata had been disintegrated by the peculiarly powerful meteorological forces of the tropics, which dissolved them as they lay, for hundreds of feet in depth, and made them distinguishable from dritt materials only by the heterogeneity and mixture of the latter. He had distinguished drifts by these and other indications, and had found so many of the usual signs that he could not but hold that the Amazon Valley had been once the bed of an immense glacier, moving eastward from the Andes. Its terminal moraine had been swept away by the ocean, which had encroached on the land for hundreds of miles on the east; but of a lateral moraine had been found a piece sixty leagues long, in the Province of Sierra. Also were found traces of local glaciers in the mountains, in various directions. He closed with pointing out the exceeding interest and importance, not to geologists only, but to physicists and astronomers as well, of the question respecting the changes and conditions of climate which should have brought about the era of ice and of glacial action.

Prof. Peirce said that it was natural to suppose that that era was caused by a colder climate of the earth, whereas it might as well be the result of a hotter one; in fact, only the latter could explain the greatly increased deposition from the atmosphere; it needed more heat to raise so much vapor. He went on to discuss the causes which might occasion a change of general temperature, rejecting entirely the effect of internal heat of the earth, and showing that a change in the sun's power, or in the constituents and contents of the atmosphere, would be sufficient.

Prof. Guyot spoke of his own explorations for a series of years in North Carolina, and his failure to find in that region any scratches, (such as were made by the mass of drifting ice in more northern regions, and which are found with more or less frequency from the North Pole to Pennsylvania, but especially in New England,) and was therefore inclined to receive with doubt the theories of glacial action in the Valley of the Amazon until the data were more complete and convincing.

Prof. Agassiz called the attention of the Academy to some facts which had not previously been clearly considered. Wherever scratches had been observed near the seacoast, it was seen that they extended under the water as far as the eye could reach. This was true on the coast of Maine, on Lake Erie, &c. He thought that the difference in temperature between the water and ice would have prevented this, if the water had been at its present level.

Assume that it is proved that glaciers extended all over the country as low as 32° or even 36°, what must have been the temperature of the earth's surface? He had reached the conclusion that a temperature of 17° Fahrenheit lower than now would answer the conditions. He believed that circumstances made it highly probable that glaciers might exist in the valley of the Amazon, and that everything tended now to prove that glaciers were much more numerous and general than has been supposed.

His reference to the small quantities of matter and periods of time with which physicists deal, as compared with the masses of matter and vast periods of time with which geologists have to do, together with the wide difference of view between himself and Prof. Guyot, called up the latter, who again referred to the lack of evidence of glacial action on the North American continent south of the 32d degree, and urged extreme caution in assigning causes and drawing conclusions while the facts were still so few and so far from exhaustive.

Prof. Agassiz explained that he had entirely abstained from trying to set causes or press them in any way, but had kept silent as to them, in order to press facts more earnestly.

Prof. Peirce apprehended that it was necessary to suppose that the heat of the ocean was as great in that day as now, while he thought that Prof. Agassiz's views must give a far different temperature. With the depth of ice on which Prof. Agassiz insisted, there must have been greater heat for evaporation. There must have been a greater evaporation because there was a greater surface. He could not believe that the surface of the ocean had been lowered 1500 feet, as many had claimed, with so great an elevation of snow upon the land.

Prof. Guyot held that at the temperature of the atmosphere claimed it could not have contained more than an inch of rain.

Prof. Frazer continued with similar views.

Prof. Henry said that, before Prof. Agassiz's discoveries, he had considered the glacial theory pretty thoroughly worked out, and had subscribed to the conclusions which Prof. Guyot had reached and set forth. He had supposed that the glaciers had not reached below 32°, as was previously held. It was evident that the winter deposition of snow was greater than the summer melting. The question, then, is whence came the heat which finally melted this mass of ice? He was inclined still to hold to the old view, that the heat came from within the earth. (Prof. Peirce gave it as his opinion that 20,000,000 years had elapsed since the surface of the earth had been affected by internal heat.) He thought the facts introduced by Prof. Agassiz belonged to what were called "outstanding facts," which were to be held for consideration until their proper bearing and value could be more fully determined.

J. P. Lesly called attention to a fact which had not been mentioned. Glaciers always have moraines. They destroy or carry forward rocks. The most extravagant powers of erosion have been ascribed to glaciers, one author even holding that the great lakes were scooped out in this manner. Now, he thought that this erosive power of ice had not been sufficiently considered in this dicussion. Granting all the facts given by Prof. Agassiz, such as the existence of a glacier 1000 feet thick, 3000 miles long, and of indefinite breadth, where did all this come from, and what must have been its erosive power?

Passing this point, he insisted on the general insufficiency of the evidence of glaciers south of the central line of Pennsylvania, especially the entire absence of scratches made by ice. He could not conceive that the ice in its movement should have made grooves in the Carolinas like those of the Northern States, and yet that those scratches should have been entirely obliterated while those in the north should have remained intact. Prof. Agassiz insisted that his observations were of great value as contributions to science, however insufficient they might be for generalization.

Prof. Guyot explained that his observations in North Carolina should not be considered as conclusive evidence that there were no ice-scratches in that region. He had explored the country with a view chiefly to topography; yet he thought it very improbable that scratches should have existed and yet have escaped his observations. Prof. Agassiz added a word as to the heavy rains of Brazil, and their great power in destroying rocks and formations in which geological records might otherwise be found. The subject having occupied two hours of the session, and called out much interesting and lively discussion, as well as broad differences of opinion, was now passed, for lack of time to devote to it further attention.

SECULAR ACCELERATION OF THE MOON'S MEAN MOTION.

The next paper was on "The Secular Acceleration of the Moon's Mean Motion," by John N. Stockwell. This paper was presented by Dr. B. A. Gould, as the author was not a member of the Academy.

Mr. Stockwell gave first a history of the discussion of this important subject. The acceleration of the moon's motion was long regarded as unexplainable by the theory of gravitation, and as casting doubt on that theory, till Laplace, by accounting for it by the change in the eccentricity of the earth's orbit, converted it into as brilliant and striking a proof of the theory. The assigned cause was recorded as fully explaining both the change and its amount, till Adams, by a new discussion, ten years ago, showed that the amount which this cause would effect was very different from that which appeared to be the observed one. Adam's views were stoutly contested, but at last generally accepted. Now Mr. Stockwell submits the whole problem to a new consideration, and endeavoring to prove that Adams had failed to give due force to one cause, the variability of the sun's perigee, which, if properly employed, would get rid of all the disturbing factors which Adams had introduced, and leave the result of Laplace the correct one. Other consequences of great importance were also derivable. The moon's motion oscillated back and forth about a mean, which was quite different from its present value; the moon was now more than six revolutions in advance of its real mean place. Mr. S. had constructed a table giving the mean and true values for some hundreds of thousands of years.

Prof. Peirce acknowledged a very strong prejudice against this paper and theory therein presented. Laplace's opinion on this subject stood unchanged until Adams overthrew it, and since that time the highest geometrical science and deepest investigation of Europe had sustained Adams's view. There is no such example of discordance between observation and theory. If the views of this paper are sustained, an unknown man will be found to have overthrown all the European geometers. He was on this account prejudiced against the paper, because of its magnificent claims. If its views were sustained, it would be a grand triumph for America. He thought that the Academy ought to examine it very thoroughly by a committee. It owed this as of duty to the author and to science. If the Academy gave an incomplete survey to the paper and an erroneous decision, it would be disgraced. He would add that he had looked at the paper, and that it looked right—written in a right spirit and prepossessing manner. He nevertheless felt bound to say that he did not think it could be sustained.

Profs. Peirce, Newton, and Dr. B. A. Gould were appointed a committee to examine the paper and report.

*(To be continued.)*