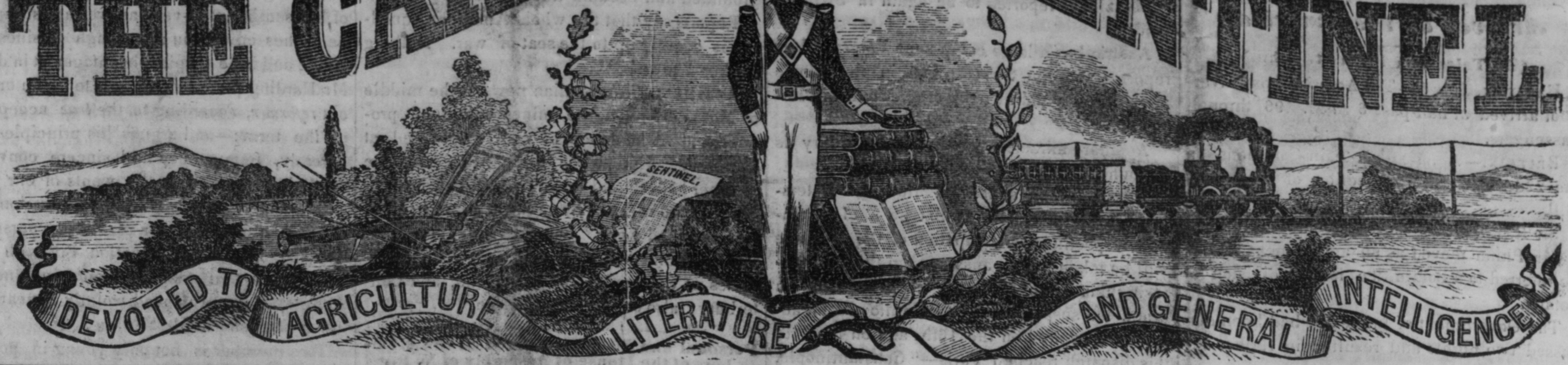


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PROCESS OF HAYMAKING.

In haymaking, the object of the farmer is to preserve the hay for winter use in the condition most nearly resembling the grass in its perfect state; and in order to accomplish this, it is necessary, in the first place, to know when the grass has reached that state, that we may thus fix upon the proper time for mowing.

Chemistry informs us that, of the various ingredients which compose grass, those portions which are immediately soluble in water are the most fitted for purposes of nutrition; and therefore, it should be cut at that period when the largest amount of gluten, sugar, and other matter soluble in water is contained in it. And that period is not, generally speaking, when the plants have shot into seed; for the principal substance is then woody fibre, which is totally insoluble in water, and therefore unfitted for being assimilated in the stomach. It has been shown that, "when the grass first springs above the surface of the earth, the chief constituent of its early blades is water, the amount of solid matter being comparatively trifling; as its growth advances, the deposition of a more indurated form of carbon gradually becomes more considerable, the sugar and soluble matter at first increasing, then gradually diminishing, to give way to the deposition of woody substance;" the saccharine juices being in the greatest abundance when the grass is in full flower, but before the seed is formed. During all the latter part of the process of fructification, the formation of the seed, &c., the sugar rapidly decreases in quality, and when the seeds have arrived at maturity the stem and leaves begin to decay; so that if the grass is not cut when in flower, a great amount of nutriment will be wasted. Many of the natural pasture grasses, however, are exceptions to this rule; some possessing a greater nutritive value when the seed is ripe than at the time of flowering. * * It is obvious, from the foregoing remarks, that nearly every species of grass—no matter whether it contains most nutriment when flowering or when seeding—yields the most profit, in hay and lathermath, if it be cut when in flower. "It has, indeed, been proved that plants of nearly all sorts, if cut when in full vigor, and afterwards carefully dried without any waste of their nutritive juices, contain nearly double the quantity of nutritive matter which they do when allowed to attain their full growth, and make some progress towards decay."

The proper season for mowing the grass, so as to secure the largest amount of nutrient properties within it, being thus determined, the next consideration is—the preservation of these useful qualities in the hay.

Experiments show, that out of the various constituents of which grass is composed, the mucilage, starch, gluten, and sugar (which are soluble in water) are alone retained in the body of an animal for the purposes of life, the bitter extractive and saline matters being considered as assisting or modifying the functions of digestion, rather than as being truly nutritive parts of the compound, and being voided with the woody fibre. The woody fibre serves only to give bulk to the food, and therefore, distension to the stomach which, when moderately filled, brings those muscles into active exercise which tend so much to promote healthy digestion, by keeping the food in constant motion.

The principal object, then, which is to be aimed at in haymaking is, to retain the soluble portion of the grass in perfect integrity.

This cannot be completely accomplished be-

cause of the imperfection in our present mode of haymaking, and the many casualties attending it. From various experiments made by Dr. Thomson, it has been found that 387 1-2 parts (by weight) of grass form only 100 when made into hay. This amount of grass contains of matter soluble in hot water 28.13 parts, and in cold water 8.21 parts; but instead of this amount, the equivalent quantity of hay, or 100 parts, contains only 16 instead of 28 parts soluble in hot water, and 5.06 instead of 8.1-4 parts soluble in cold water. A very large proportion of the soluble, or nutritive matter of the grass has obviously disappeared in its conversion into hay. The result of the process has therefore been to approximate the soft, juicy and tender grass to woody fibre, by washing out or decomposing its sugar and other soluble constituents. The great cause of this deterioration is the water which may be present, either from the incomplete removal of the natural amount of water in the grass by drying, or by the absorption of this fluid from the atmosphere. "Water, when existing in hay from either of those sources, will induce fermentation, a process by which one of the most important constituents of the grass, namely, sugar, will be destroyed. The action necessary for decomposition of the sugar is induced by the presence of the albuminous matter of the grass; and the result is, that the sugar is converted into alcohol and carbonic acid; and that alcohol is produced in a hay stack, in many cases may be detected by the similarity of the odor disengaged to that perceptible in a brewery."

The process of haymaking, then, is the removal of this moisture from the grass; and Dr. Thomson has found that the only method which succeeds in preserving grass perfectly entire is by means of artificial heat.

The quantity of water, or volatile matter, capable of being removed from hay at the temperature of boiling water varies considerably; the amount of variation during his experiments being from twenty to fourteen per cent. If the lower percentage could be attained at once by simple drying in the sun, the process of haymaking would probably admit of little improvement; but the best new-made hay that he has examined contained more than this amount of water, the numbers obtained verging towards twenty per cent. When it contains as much as that it is very liable to ferment, especially if it should happen to be moistened by any accidental approach of water. Rye grass contains, at any early period of its growth as much as 81 per cent. of water, the whole of which may be removed by subjecting the grass to a temperature considerably under that of boiling water; but even with a heat of 120°, the greater portion of water is removed, and the grass still retains its green color—a character which appears to add greatly to the relish with which cattle consume this kind of provender. The advantages attained by this method of making hay are sufficiently obvious. By this means all the constituents of the grass are retained in a state of integrity; the sugar, by the absence of water, is protected from undergoing decomposition; the coloring matter of the grass is comparatively little affected; while the soluble salts are not exposed to the risk of being washed out by the rains, as in the common process of haymaking.

From the above chemical observations, made by Dr. Thomson, in his recent researches upon the food of animals, we learn the theory of haymaking; the inquiry now is—how, in practice, can we best approximate to the correct principles laid down?

It is an essential point that the mowers should be good workmen and perform their work neatly

and evenly, making the scythe cut as near the ground as possible, in order to insure the greatest bulk of hay, and facilitate the springing up of the young shoots of the eddish or aftermath. They generally begin work before sunrise, and remain until after sunset; from one acre to an acre and a half, according to the bulk of the crop, being a fair day's work for a man. As soon as the dew is off, the mowmen should be followed by men and women with forks, who shake and spread the swaths evenly over the whole surface of the meadow; or this may be most economically and expeditiously done by means of a tedding machine, drawn by a horse, which will do the work of twelve or fifteen haymakers, and distribute the grass more thinly and evenly as it crosses the field.

And this must not be allowed to lie long beneath the scorching heat of the sun without being turned; for by thus doing, the upper part becomes brown and withered, whereas it is desirable to keep it as green as possible. All the grass which has been tedded and turned during the day, ought to be thrown together the same evening in "winrows;" that is, long rows throughout the field, gathered together by the haymakers working in opposite directions, the outside women, or boys, using rakes, the others forks; the hay gradually accumulating, whilst thus being sent on from one to another, towards the place of the intended row, until it forms from a party on each side, a double row, and two men follow, patting these two into one compact "winrow," about five feet wide and three high. Or, the hay may be put together into small heaps or "footcocks," the former method being preferable for expedition, and affording sufficient protection from heavy dews, the latter more secure from the injury of rain, and may be adopted if the weather prove cloudy or adverse. The following morning, or on the return of suitable weather, the whole must again be thrown out, so as to secure the greatest possible benefit from the sun's rays and drying winds; and the grass mown on the preceding night, and early that morning, may be tedded when the dew is off, and afterwards turned; and provided it be fine drying weather, the first day's hay will soon be sufficiently made—that is, it will have lost most of its moisture, the chief part of its natural juice will remain, and, as it has been well scattered about and frequently turned, this will have been effected without some portions of the grass being too much withered and others still too succulent. It still retains its fine light green color, and the farmer's aim now is to secure it with the greatest possible haste. For this purpose, the hay is gathered together into rows, and the rows divided and collected into "haycocks;" which may be done by forking, but if the sky is overcast, and threatens rain, the large winrows should be drawn up into large cocks by horses, two horses walking, one on each side the row, dragging a rope after them, which passes round the end of the row; two men ride upon this rope, and as the horses proceed the hay rises up between them, forming a heap; and this, having slid far enough to accumulate a sufficient quantity, the rope is lifted up, the hinder portion of the mass pulled up on the top, and another cock commenced. Care should be taken that the cocks are "made up" neatly and well, to keep out the rain, and the horse or hand rakes must be kept going during the whole time. All the hay must, in due course, be made and cocked after the same manner. Unless the aspect of the sky betokens approaching showers, the smaller kind of haycocks, made by rolling up the winrows with forks into proper sized heaps, will be best.

The next morning, or as soon as the weather permits, they may be well thrown out in "stad-

dles" of a few yards in width, to insure the hay being sufficiently well dried; and it will then be ready for loading.

Of course, the farmer must not be implicitly guided by any given rules for haymaking; in this operation he has to depend upon a very fickle and changeable power, namely, the influence of the weather, and he must vary and modify them to suit circumstances. The object to be aimed at can alone be exhibited to his view, and a model method pointed out for him to imitate as closely as he can. The description given of the chemical nature of this process explains to the haymaker what he has to do, and perhaps the following truths will assist him in discovering the most eligible way of doing it:—

1st. He must remember that the chief points is to preserve the hay from dew and rain,—water washes away the soluble salts and other matters, and, when in the stack, will cause fermentation, and that injures the hay by destroying some of its most valuable properties; therefore, bring it into windrows, or make into footcocks at night fall, and never open it in the morning until the dew has evaporated.

2d. Bear in mind that, if the weather is unfavorable, the less it is disturbed the better, and the longer it will retain its native powers. Hay has been found to preserve a great amount of its nutritive qualities for many days, nay, even weeks, when mown wet, or when saturated with the rains whilst lying in the swath; if, therefore, the weather be unfavorable, it will be better not to ted the hay at all, nor even turn over the swath. If repeatedly dried and wetted again, it soon becomes valueless; this error of meddling with hay amidst frequent showers must, if possible, be avoided, for it is far better to have it somewhat tainted in the haycock than thus exhausted of its nutriment, and spoiled, by being repeatedly spread.

3. Take care not to allow it to remain long under the hot beams of the sun without being turned; this will preserve the color and fragrance of the grass; so that, without baking it too much, (thus destroying its virtues) it may be so dry that a little heating or fermentation as possible shall occur in the stack, remembering also that coarse grass does not require so much "making" as fine, succulent herbage.—*Cyclopedia of Agriculture.*

LIME WATER FOR HENS.—An article has been going the rounds of the papers, stating that lime water, placed in shallow troughs, for hens, would make them much better layers. We had formerly tried a little slacked lime in the dough with which we fed our hens, and found that they ate as little of it as they possibly could, but thinking that perhaps they would like it better in a liquid state, we tried the above receipt; but without success.—They fought shy of it, and would not drink it if they could get pure water. Perhaps they thought they laid eggs enough without it, as they have given me an egg apiece, a day, for the last nine weeks, Sundays included. Any way, they seemed to think that the forcing principle would not apply to them, or if it should, that they would prefer to have it applied in the shape of corn, rather than lime water.—*Mid. Farmer.*

NAILS GROWING IN THE FLESH.—A late writer in the Ohio Cultivator gives the following remedy:—

Cut a notch in the middle of the nail every time the nail is pared. The disposition to close the notch draws the nail up from the sides. It cured mine after I had suffered weeks with its festering.