

DOCILITY OF ANIMALS.

As has been previously hinted at, the systematic handling, at regular times, of all the stock—cattle as well as horses, in and out of their stables—so familiarizes them to their keepers that they become pleasantly acquainted with each other, which affords increased confidence in both, and thereby the animals become docile and tractable, and the owner comes soon to understand well their wants, nature, peculiarities, and diseases—if they have any, which is very seldom—and how to treat them successfully. Thus, the management of stock, generally, is reduced to a science, eliciting study, observation, and reflection, and by thus exercising the intellectual faculties, the business becomes far more interesting, as well as profitable.

Knowing and appreciating the animals more highly, the keeper is moved to treat them rationally and with increased kindness, which really constitutes him a better man and them better servants!

Were *such* the only advantages to be derived from the soiling process to the humane lover of knowledge, they of themselves would be rich compensation for all of the additional attention required to practice it. Besides, the stock can be more judiciously supplied, with more comfort to them, the food being readily selected, as to kind and quantity, agreeably to their particular wants; and the owner is happily relieved from the annoyance of "breechy" depredations by "unruly" cattle, which often commit more destruction in a single day or night than their own worth, to say nothing of the damaging effects to his own temper and equanimity, which, oftentimes, considerably abridges both profits and enjoyment. This should lead to those higher reflections and more beneficent impulses which it were well should enter into all of our transactions, with either men or animals who are always to be our companions or servants.

With these reflections, we will proceed to point out the more direct and pecuniary benefits of the practice, as they have been abundantly proved by the various experience of enlightened operators on both sides of the Atlantic.

NINE DISTINCT BENEFITS.

We can now sum up, clearly, nine principal advantages that may be surely derived from the faithful practice of this beautiful system of *green soiling the stock* of the farm, besides the incidental benefits which grow out of it indirectly, namely:

Saving of land; saving of fences; saving of food; improved condition and comfort of all the animals; larger product of milk and flesh; greater docility of the animals; freedom from breechy depredations; larger accumulations of manure; and increased order in all the business of the farm.

Incidental to these, will be greater cleanliness throughout the premises, there being few foul fence-corners, and no feed or manure scattered about under foot; a greater variety of food can be used, and everything saved; allowing the convenience of doing more of the work by one's

self, and requiring the paying out of less money; and permitting the sale of a larger portion of all grain and fruit, or other *matured* products that may be raised on the place, and be desired in the usual market; and the comfort of doing a much larger share of the ordinary business under shelter; and having a much larger amount of *value concentrated* in a comparatively smaller space, throughout most of the farm property and products; as, for instance, one hundred dollars' worth of stock or grain occupies much less space than the same value in land or fences, and a hundred dollars' worth of wool or butter less space than the same value of grain.

LARGER CROPS REQUIRE GREATER MANURING.

It is true, that this process of extreme cropping makes severe drafts upon the capacities of the soil, and requires corresponding liberality in supplies of manures; yet, the superior product much more than pays for the extra requirements of manure and labor, as surely as the well-fed horse returns better service than the poorly-fed one does.

And all experiments and observations prove that the quantity of manures, made and secured from the stock which eats this produce, if all properly applied to the land, is sufficient to keep up its productiveness to the highest point demanded by the system, so long as it is pursued, and even enough to keep much more land in high tilth.

Now, taking these two propositions together—namely, that the land thus treated and often cropped yields far more than it otherwise would, and much more than pays the cost; and that the stock fed upon it produces more than manure enough to keep up the soil to this state—we are prepared to assume, that it is more advantageous to maintain stock on this plan than to allow them the range of much more land. And this fact will hold true as well with large farms as with small ones, and in new countries as in old ones; for, in either case, capital in lands and fences is saved to a large extent. "Soiling" will make every acre that is used employ more labor and stock, and give a greater return for them, besides employing both more pleasantly, than the pasturing custom possibly can!

But, it may be declared by some, that "in *new countries*," thinly settled, where there is unlimited range of pasture, it will *not pay* to raise and cut crops to feed out to stock in stalls, when they can so readily run and have what they need "for the picking of it themselves." Though this idea is generally believed and indulged by emigrants to the new States, it is nevertheless fallacious, and is successfully answered in previous remarks upon the *new eighty-acre farm*. It will cost no more to *raise the feed* for stock on the farm at home, because there happens to be a *large range*, than if it did not exist; while the cost and loss of chasing the stock *is greater* than if the range were *small*! It is proper to remark, in this connection, that there are some peculiarities about the prairies of the South and West which require a different mode of cultivation in some respects, from that commonly pursued in other portions of the country, and which have been presented in the volume of the Report for 1858, at page 283, written by myself, and a

reference to which may render it unnecessary to repeat them at this time.

But we may repeat, that whatever reasonable course or policy will secure the same return for *less labor*, without depreciating the capital, must certainly be peculiarly a good system for a *new country*, where labor is scarce.

HIGHER INFLUENCES OF THE SYSTEM.

When thoughtfully considered, it will be seen that the general effect of this practice upon the mind of the operator will be elevating and salutary. This branch of his business absolutely requiring constant *gentleness* and *order*, his *general* habits and feelings will naturally become imbued with similar principles and sentiments toward everything with which he comes in contact, to a much larger degree than *could* be under the ordinary mode of imperfectly and carelessly cultivating large farms, and allowing the stock to run at large, often trampling under foot and destroying as much good feed as they consume, and subjecting the keeper often to harassment in chasing after his half-tamed animals; his own disposition, as well as theirs, getting badly "riled-up," interrupting his tranquillity and happiness for hours or longer; causing him, in some measure, to lose his kindly interest in them; and, as though it were a kind of natural reflex from his own condition upon them, they do not thrive so well as they ought, but being frightened and excited they, too, *fret away* some portion of their *thrift*—serenity being as essential to the highest product of milch cows and fattening animals, as to the enjoyment of man. The very opposite from the above is the case where all the animals are quietly secured and amply fed; comfort and order reigns; and there being little or no disturbing cause to man or beast, the former seldom maltreats the latter; and all enjoy *thrift* and progress to the highest reasonable degree.

This to some, with only partial reflection, may be deemed but a trifling consideration; but the more thoughtful and observing operator well knows that no attitude of mind, in the farmer or other person, can be productive of more enjoyment and prosperity than the steady preservation of gentleness and serenity; it is certainly a manly, a noble deportment, and must ultimately be as profitable as it is pleasant.

In addition to all this, the operator will uniformly find this frame of thought and mind far more favorable for reflection and investigation into the causes of all the various phenomena which constantly come before his observation in the pursuit of his business, and to enable him to extract therefrom more elevated enjoyments than can be experienced by the person who is constantly confused by disorder and excitement from surrounding circumstances. Order and tranquillity are eminently essential to deep and efficient thought and the successful pursuit for knowledge everywhere, but especially so in the study and examinations of living creatures.

Besides, many of the neighborhood quarrels and individual enmities are engendered by damages and trespasses committed by cattle running at large, and often terminating in lawsuits, that subject both parties

to losses, in time and money, greater than the value of the damages and animals combined; all of which would have been comfortably avoided under the general prevalence of "soiling" the animals in *secure stalls*.

GENERAL VIEW OF THE SUBJECT.

Whatever is conducive to order and thoroughness in its operations must be advantageous to the pursuit of agriculture, generally, in all regions; and to forward that object, is the sole and earnest purpose of writing this article.

That process which increases the fertility of the soil, while it preserves its productiveness, and which secures the highest remuneration to the largest amount of labor, with the least depreciation of the capital upon which it is employed; whatever accomplishes these ends, or any of them, in one State, must be good policy also in any other, while the like results follow the operation.

Now, it is well known that land, which is liberally enriched by suitable manures, will produce much more bulk and value of succulent feed if the crop be frequently cut off, before it ripens or matures, than if left to attain that complete state before it is cut at all. For instance, if a field, which is mellow and in high tilth, sowed with corn, or oats, or millet, or other like crop, be mowed two or three times during its growing season, it will yield at least twice as much as if cut but once in that season. So with clover, and the ordinary meadow grasses. This results in obedience to a pervading law in vegetable growth, which continually strives to reproduce or perpetuate itself so long as the season for growing will permit, and winter holds off.

If meadows are sufficiently rich, and kept annually top-dressed with fine manures, they will yield two to three tons of good hay at *one* mowing in the season; but if cut *three times*, at periods properly chosen, during the season, they will yield four to six tons of still better hay than that obtained at one cutting. And instances are numerous where even twice that quantity has been obtained to the acre from timothy and red-top, or even blue-grass meadows. These statements are sustained by testimony, both in this country and Europe, of early as well as recent date.

There is a prevalent belief among many cultivators, that for a "stock-farm," or to keep a large number of cattle, it is absolutely necessary to have a large farm, or a vast tract of land; an opinion, it is believed, not well founded, which a fair understanding of the plan and results of "soiling" plainly shows, for it is evident that the cost of additional land and fences demands more capital by far to pasture large herds and flocks, than is required to cultivate sufficient crops from less land to feed them with in stalls and yards, where no feed is wasted and much manure is saved. The accumulation of *acres* increases taxes, but their enhanced *fertility* does not increase the amount of taxes.

By taking the facts, results, and operations above elicited, and carefully and honestly making estimates, in comparison with ordinary farming anywhere, it is believed that every candid inquirer will arrive at the conclusions stated above.

SOILING AND ROOTS IN ENGLAND.

Soiling cattle has proved highly advantageous in Europe and the older States of this country in all the instances where it has been adopted, and it may also be made profitable in the new States, even where land is cheap and population sparse, and thereby much of the hardest labor, incident to new settlements, be avoided; for even the usual labor of making the inside fences, where timber is plenty even, can be more profitable and pleasantly appropriated in raising feed and giving it to the animals in a proper manner; and surely the latter will be the lighter toil of the two!

But, to show what may be accomplished on a given quantity of land, when the full amount of labor and manure which it is capable of receiving is applied, a quotation is made from the statement of Murwen, a distinguished cultivator in England, a few years ago, on the subject of soiling and rotation:

"On 894 acres of land he applied 13,700 loads of good manure on the whole field, at a cost of \$12 per acre; he paid a rent of \$12 per acre; and the labor, taxes, implements, interest, &c., cost another \$12 per acre; amounting to a total expenditure of \$36 per acre, and of about \$31,000 on the whole farm. Then, the value of the entire product was, in round numbers, £8,600, or about \$43,000; leaving the handsome profit of about \$12,000 on the cultivation of the farm for the year; affording an interest on the investment of over thirty-eight per cent, and of about \$13 50 per acre;" an achievement which may be contemplated with profit by many who seem content with \$3 profit per acre!

Among European agriculturists, *root crops* have become an important staple in their improved husbandry, and play an important part in the "soiling" process, furnishing the largest and best portion of the winter's feed. And there is no doubt, from countless trials, that good ground, with proper manure and culture, will yield a greater quantity to the acre of nutritious food for animals in roots than in any other crop, whether for milk or flesh. Instances are numerous in this country and Europe, where 1,100 bushels of carrots, the same of parsnips, and 1,300 bushels of beets and of turnips, to the acre, have been obtained. In England, turnips and parsnips are the favorites; while in France, beets and carrots are more used; and in this country they may all be used with inestimable profits!

Besides their large nutriment and productiveness, roots possess much value, from the fact that they can be sown and will mature later in the season than almost anything else which the farmer raises; even after the ground has been cleared of some other summer "soiling" crop, a good yield of turnips may be raised and got off before the frost closes the ground; and then they leave the field in a clean, mellow condition, to be used the following spring or summer, with whatever crop it may be desirable to occupy it with. The work of digging and gathering them is about equal to one plowing for the ground.

Having once engaged in the practice of "soiling," every farmer, who has method and calculation enough to carry on his business suc-

cessfully, will discover, readily, such special modifications as will be most appropriate and beneficial for his particular case; as what succulent it is best for him to put in for the particular kind of stock which he desires to feed; what lands, and how much *he* needs to devote to each animal; what animals it is desirable for him to keep; together with suggestions in regard to the requirements of the markets that may be accessible to him; but still, in regard to the *prime principle*, that *all animals* should be *kept up*, and *all feed* be gathered and regularly given to them in the *stalls* or yard, there can hardly be two opinions; and to convince those most interested of its truth and economy, only needs that the facts and directions contained in this essay should be thoughtfully examined, and if not satisfied, it will cost no one much time or trouble, or subject him to the slightest danger of loss, to make the experiment with a single animal, or on a single quarter of an acre, or for a single season; it will not, in anywise, require a hazardous or expensive experiment to test the subject; while, agreeably to uniform testimony thus far, a highly beneficial lesson will be learned, and the conviction be confirmed.

MR. QUINCY'S STATEMENT.

In our own country the most thorough and successful operator in the system of "green soiling," and who may be regarded the father of its practice, in New England, was the Hon. Josiah Quincy, of Massachusetts. He has been followed with admirable success by his son, Josiah Quincy, Esq. And I cannot do a better service to those who may desire to give attention to the subject, in any other way, than by copying a few paragraphs from an essay by him, showing the results for many years of their experiments in "soiling," from which others can learn the general system, and make such changes in the order of operations as their individual cases and localities and their respective peculiarities may seem to render necessary. Mr. Quincy says:

"My farm being compact, the annoyance of having fifteen or twenty head of cattle driven night and morning to and from the pasture; the loss of time in often turning the team and plow, owing to the number of interior fences, and the loss of surface of good land capable of being plowed, owing to them and the many head lands, all drew my attention to the subject of 'soiling' and its effects.

"I found that European writers maintained that *six* distinct advantages were to be obtained by the practice of 'soiling,' over that of pasturing cattle in the summer season:

- "1. It saved land;
- "2. It saved fences;
- "3. It economized food;
- "4. It kept cattle in better condition and greater comfort;
- "5. It produced more milk; and
- "6. It increased the quantity and quality of manure;"

To the above advantages enumerated by Mr. Quincy, observation, with some experience, warrants the addition of three more distinct benefits that may surely be derived from a faithful practice of this

system, which have been, in part, described in the foregoing pages, namely:

7. Better discipline and docility of the animals;
8. Freedom from breechy depredations; and
9. Increased order in all business about the farm.

These last three items are more particularly realized in those sections of country where less care and attention have been given to the improvement of stock, and consequently less orderly habits prevail among the animals, and less method in the business. Incidentally to this will be felt the benefits of having the various animals always at hand when they may be desired.

Mr. Quincy proceeds: "Satisfied in my own mind of the beneficial effects of the practice, I adopted it in the year 1814, and adhered to it until the year 1822, keeping from fifteen to twenty head of milch cows, with some other stock, and with entire satisfactory success." "From that time, being occupied in various public offices, in Boston and vicinity, I exercised no superintendence over my farm for twenty years."

"Resuming its management in 1847, I returned to the practice of 'soiling.' Since then, I have kept from thirty to thirty-five head of milch cows in this way; so that, in my mind, my experience is conclusive on the subject."

He says that *one acre soiled* from will produce at least as much as *three acres* pastured in the usual way, and that "there is no proposition in Nature more true than that any good farmer may maintain upon *thirty acres* of good arable land, *twenty head* of cattle the year round, in better condition, and greater comfort to the animals, with more profit, less labor, less trouble, and less cash advance for himself than he at the present mode expends upon a hundred acres." He further says: "My own experience has always been *less* than this, never having exceeded *seventeen acres* for *twenty head*."

"To produce a sufficient quantity and succession of succulent food—about one and a half or two square rods of ground to each cow to be soiled—sow as follows:

"As early in April as the state of the land will permit, which is usually between the 5th and 10th, on properly-prepared land, oats at the rate of four bushels to the acre.

"About the 20th of the same month sow, either oats or barley, at the same rate per acre, in like quantity and proportions.

"Early in May sow, in like manner, either of the above grains.

"Between the 10th and 20th of May sow Indian corn, (southern dent being best,) in drills, three bushels to the acre, in like quantity and proportions.

"About the 25th of May sow corn, in like manner and proportions.

"About the 5th of June repeat the sowing of corn, as above.

"After the last-mentioned sowing, barley should be sown in the above-mentioned quantity and proportions, in following successions, on the 15th and 25th of June, and in the first week in July, barley being the best qualified to resist the early frosts."

In Illinois and southern Wisconsin it will often happen that the ground will do to sow as early as the 20th of March, occasionally even

earlier, while somewhat less seed—say three bushels—will answer fully as well. In this region, millet, Hungarian grass, sorghum, and spring rye, have proved to be good crops for soiling; the sorghum being particularly useful for the late or second sowing, late in June.

Corn, too, at the West and South, may profitably be sown ten or fifteen days earlier than the dates indicated for New England, and will do well sown broadcast, instead of with the drill, on mellow, clean ground, if thoroughly harrowed both ways, and all the better if well rolled after the sowing.

These various provisions for a variety of crops will supply food something in the following order, viz:

"The oats, sown early in April, will be ready to cut, for soiling, between the 1st and 15th of July, and will usually remain succulent until about the middle of the month.

"Those sown about the 20th of April will be ready to cut between the 15th and 20th of July, and will last nearly or quite till the 1st of August.

"Those sown early in May will be ready to succeed the preceding, and will last till near the middle of August.

"The corn, sown on the 10th and 25th of May and early in June, will supply, in succession, excellent food till early in September.

"The barley, sown in July, will continue a sufficient supply of good feed until the 1st of November, when, as sometimes before, the *tops* of roots—as carrots, beets, and turnips, with cabbages—are a never-failing resource."

Generally, in the southern and western regions, these crops can be sown, and consequently will be ready to cut, ten to fifteen days earlier than mentioned by Mr. Quincy for the climate of Massachusetts.

"Reduced to a single statement, my experience and system is, for the support of my soiled stock during the months of July, August, and September, to sow in the months of April, May, June, and July, equal to *three quarters of an acre* for each head of cattle to be soiled, in such order as will give a regular succession of succulent food during the three first-mentioned months.

"For their support from the 20th of May, and during the month of June, I reserve early clover and other grass at the rate of *one quarter of an acre* for each head of cattle soiled.

"For their support during the first half of October, I depended upon the *second growth* of the half acre cut over in May and June, and the *second growth* of oats and corn cut over in July.

"It now remains to be shown that the cost of raising, cutting, and distributing the food to the stock, is compensated by these savings above mentioned. Upon this point, my own experience has satisfied me that the *manure* alone is an ample compensation for *all* this expense; leaving the savings of land, of food, and of fencing-stuff, as clear gain from the system.

"A popular objection to this mode of keeping milch cows is, that want of exercise must affect injuriously the health of the animal. To this European writers, some of whom have kept, in this way, large herds, reply that they 'never had one sick, or one die, or one miscarry, in consequence of this mode of keeping.' After more than ten years'

pursuing of this practice, my experience justifies me in uniting my testimony to theirs on this point."

It is believed that in the West and Northwest, at least, *clover*, which runs its *roots deep* into the mellow ground, should enter more largely into these soiling rotations; it brings more of the fertilizing substances of the earth from *below*, by its long penetrating roots, than any of the others named; it absorbs faster the moisture of the air and the dews; it acknowledges more readily the manures furnished to it, and most kindly accepts the rankest sorts; while it is more easily and vigorously stimulated by plaster, or ashes, or lime, or other light top-dressings, and grows faster than almost any other vegetable; and, unlike most others, it does not have to be sown every season; then it does not appear to be affected or stunted so much by frequent cuttings; and, finally, is more pleasant for plowing under, when desired, than any other, its vast amount of large leaves, stems, and blossoms enabling it to consume from the air a larger and richer quantity of those fertilizers or nutriments, with which the atmosphere is bountifully charged, than many persons seem to be aware of; which, altogether, renders *clover* almost inestimable, not only for "soiling," but for its worth in farming generally, when fairly appreciated and employed; while very few things are better relished by all farm animals, if well and early cured, free from dust or "sun-burnt;" and farmers would find their account in making more general use of it; certainly in the newer States.

Buckwheat is also a good crop to soil with; for, if cut while young, it makes a very palatable food, and will quickly "sprout up" a little, and afford an excellent "green manure" for plowing under, on which to sow a crop of winter rye or wheat. This manuring with green crops turned under, is fast becoming deservedly popular where known.

Peas, also, would make a valuable addition to the above series of "soiling" plants in almost any region of country. They admit of being sown very early—it should be done broadcast, at the rate of two to three bushels per acre—as early as any of the spring crops, and then they grow quickly for green feed, and can be readily gathered into rows or bunches by either hand or horse rakes; then they contain, both the peas and haulm, a large quantity of nutriment, and are much relished by both cattle and hogs; and, when ripe, peas are among the very best feed for work-horses and fattening hogs, when ground or cracked. Then they come off early, leaving the ground in clean, handsome condition for a final crop of turnips or rutabagas. The same may be said of *beans*, as a soiling crop; though few animals, except sheep, will eat them when ripe, unless they are cooked, then they are much liked by different animals, and are exceedingly nutritious, particularly for sheep, poultry, and for fattening hogs.

These are the principal crops which can be used to advantage for "soiling" and rotation. But, doubtless, in different localities, various operators will find still other crops which may be found useful, possibly preferable, in this system, to some named above; and the more, if variety is secured, the better for the success of the operation.

From these considerations, with others which might be realized by a more extended practice. *soiling stock* will, unquestionably, prove to be

one of the most efficient, as it will be one of the most pleasing, measures for not only enlarging the profits of agriculture, but for MAINTAINING, as well as increasing, the PRODUCTIVE POWERS of the EARTH; and that the time for the realization of a consummation so desirable is no further distant than the time when the process shall receive that just attention which shall make it properly understood and adequately appreciated. Then the lion and the leopard, emblems of man's destructive passions, shall lie down with, that is, be in useful harmony with the domestic animals, emblems of the productive faculties of man; and a child, that is, innocence and truth, shall lead them all through the world of peace and prosperity.

AGRICULTURAL SCHOOLS OF PRUSSIA.

LEGATION OF THE UNITED STATES,
Berlin, May 15, 1859.

SIR: I send you herewith a communication from the minister of agriculture on the subject of the agricultural schools of Prussia.

As applications are constantly made to me for information concerning the agricultural schools of Germany, I hope you may find this communication worthy of publication. In a few days I hope to be able to forward you a list of seeds, &c., in order to have your opinion as to the proper articles to forward you this fall from this city.*

"The Prussian agricultural schools are, some of them, public, and others are private establishments, but all receive governmental support, and, as has been indicated, are generally under governmental control. In the first place there are *four* public AGRICULTURAL ACADEMIES, the purpose of which is to instruct *young farmers, who have already a preparatory knowledge*, in the physical sciences, and their bearing upon agriculture, and in agriculture itself, with its associated branches of industry. They are each provided with a chemical laboratory, a library, collections of natural history and natural philosophy, and a building for the practical purposes of husbandry, in connection with a larger or smaller quantity of land. This land is intended not only to afford instruction, but also in time to yield a harvest of benefit from the experiments carried on upon it, with the aid, where necessary, of the laboratory, and including the culture of new plants and varieties, the results derived from different manures, the comparison of different methods in the culture of crops and in the feeding of stock—all conducted with the double object of advancing scientific truth and of improving actual practice.

"The laboratory thus subserves an important purpose in the development of such experiments, while it is also essential for the chemical studies and analytical problems which form a part of the student's pursuits, and should therefore be located in a room adjoining the one occupied for chemical lectures. The other apparatus, particularly such instruments as the microscope, are also of use in conducting ex-

* As this communication had already appeared in the Country Gentleman, (No. 1, vol. xiv., July 7, 1859,) it was deemed advisable to insert it as therein translated.