

Board of books

THE AGRICULTURIST
Will be published every

SATURDAY by
ANDREW LIPSETT,
at the
OFFICE ON QUEEN STREET,
Opposite City Hall, F'ron. N. B.

Subscription, - \$1.50, in advance.
Should the subscription remain unpaid for 3 months from the time the first paper is sent to the subscriber, the price will be \$2.00.

The Agriculturist.

A WEEKLY JOURNAL DEVOTED TO AGRICULTURE, LITERATURE, AND NEWS.

ANDREW LIPSETT, Publisher.
VOL. 1.

" AGRICULTURE THE TRUE BASIS OF A NATION'S WEALTH."
FREDERICTON, N. B., NOVEMBER 30, 1878.

ANDREW ARCHER, Editor.
NO. 34.

BOOK AND JOB PRINTING

of all description
EXECUTED ON MODERATE TERMS

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Agriculture.

THE MAINE FARMER.—The issue of the *Maine Farmer* on Saturday last completed another volume. The editor says, fifty-two weeks spanning the circle of the four seasons and stretching from winter over the spring and through the long summer days are unsurpassed in the record of work and events for a year; and the completed volume takes its place by the aid of the forty-five volumes which have preceded it. Forty six is a vigorous, and we hope that the *Maine Farmer* has a long useful and prosperous life still before it.

Winter Study.
We copy a very excellent article on "a course of reading for young farmers" from the *Maine Farmer* which young farmers would do well to pause and profit by.

There are very few young farmers in this Province, who are able to purchase all the books set down below for an elementary course of general agricultural reading, and for the special courses we have marked in italics those books which seem to us the most useful. A few books we would read better than a great number merely glanced at. We have not appended the list of miscellaneous works which the *Maine Farmer* marks as being of great value to the farmer, or the select lists which it gives. The young farmer should join with the study of good books, the perusal of agricultural journals, of course he should read the *Agriculturist* which contains select matter from the best agricultural papers. We believe that the New Brunswick farmer will find that American agricultural papers more interesting and useful than British, and if he wishes to take in one or two journals, he might subscribe for the *Maine Farmer*, *American Agriculturist* (New York), *National Live Stock Journal* (Chicago).—

The winter months bring the true carnival time to the reading, thinking farmer. It is his real university season, his period of study and his great opportunity of acquiring information about his business. During the time of active out-door work, if he reads one or two weekly papers, a monthly or so, and keeps run on the markets, he does well; but with the long evenings, there is ample chance for study and mental improvement, and he will be a better and more successful farmer in the season to come, if he improves the time they give him in acquiring useful knowledge pertaining to his business. Formerly used to be thought a farmer had no need of books, no call for learning or knowledge. A virgin soil yielded good returns to the industrious man, and few questions of science came between the farmer's mind and the crops he raised. But now the conditions are different. In almost every branch of husbandry the greatest success comes from intelligent labor, and science and enlightened practise are constantly yielding their aid to the man who seeks their counsel and assistance. The opportunities of this aid are also greater than ever in the past. It is but a few years ago that half a dozen books reprinted from those of some foreign country, illy adapted to our wants and conditions, were all the intellectual help the farmer had. Now we have American treatises on every subject in the whole range of practical and scientific agriculture and rural economy, amounting in the whole to a vast library. Indeed, so abundant are these that there is real need of an agricultural bibliography for the use of our students, colleges and intelligent farmers generally. Moreover, they are so cheap as to be quite readily obtained, and the humblest farmer may rightfully claim their help. The corner book-shelf may be to him a means of culture and information which the best student in the land would not spurn; while a well filled "Secretary," such as we have seen in many farmer's homes, will at once become the university, the laboratory, the best tool-room of the intelligent young farmer. He may have been denied the advantages of schools in his boyhood, he may have had slight means for acquiring an education; but with these few books, and a high determination he can conquer all those obstacles and take his place with becoming assurance as a man of culture and education among the best of the land. Education for a power, it levels social distinctions when money fails to do it, and places a farmer who controls it, as the peer of any man living. That farmer will be a wise and sagacious man, therefore, who acknowledges the aid books can give him, and who provides in a modest way year by year, for a few books for himself and family, as certainly as he lays in fuel, provisions and clothing. The young farmer, especially, who is just beginning business, will by their help obtain a grand start at the beginning of his life, and who does not seek their assistance, and in the race for life will come out a long ways in advance of the man who has not used his brains, and who has not put two thoughts together in all his life.

With the hope of giving direction to young farmers who wish to pursue a thorough and systematic course of reading in reference to their business the present winter, we give below lists of such books as will be of great

est assistance to them. This list has no reference to books which should form the basis of, or be found in the farmer's library as such—it relates entirely to those technical works which pertain wholly to the profession of farming in its different branches. And it must be understood that a course of agricultural reading or study will depend much upon the tastes of the individual farmer and upon that particular specialty in farming which he designs to follow. But like a university education, the beginnings of each course will be essentially alike; afterwards the farmer can elect which branch he will pursue more fully, devoting to it the greater attention. If he is dairying, or fruit growing, or the raising of horses, or sheep husbandry—he will of course need to study up with particular reference to that subject in which he is most interested and which he designs to make the business of his life.

List of books for an elementary course of general agricultural reading: *Pennington's Scientific Agriculture*, *Warren's Handy Book of Husbandry*, *Allen's New American Farm Book*, *Johnson's Hoe Crops*, *Peck's Johnson's Hoe Crops*, *Norton's Scientific Agriculture*, *Harris' Talks on Manures*, *French's Farm Drainage*, *Hyde's Lowell Institute Lectures on Agriculture*, *Loring's Farm-yard Club of Jotham*.

Course in Stock Raising: *Miles' Stock Breeding*, *Goodale's Principles of Breeding*, *Allen's American Cattle*, *Stonington's The Horse in the Stable*, *Field's Herber's Hints to Horse Keepers*, *Randall's Practical Sheep-keeper*, *Wright's Practical Poultry Keeper*, *Harris on the Pig*, *Cook's Manual of the Apiary*, *Gaige's Our Domestic Animals in Health and Disease*, *Law's Farmer's Veterinary Adviser*, *Mayhew's Horse Doctor*, *Thompson's Food of Animals*.

Course in Fruit Growing and Gardening: *Downing's Fruits and Fruit Trees*, *American, Thomas' Fruit Culturist*, *Field's Pear Culture*, *Fuller's Grape Culturist*, *Fuller's Small Fruit Culturist*, *Henderson's Practical Floriculture*, *Henderson's Gardening for Profit*, *Whit's Strawberry Culture*, *Burr's Field and Garden Vegetables of America*, *Watson's American Home Garden*.

Course in Dairy Farming: *Sturtevant's The Dairy Cow*, *Hazzard's The Jersey, Alderney and Guernsey Cows*, *Warren's Essay on Jersey Cattle*, *Arnold's American Dairying*, *Willard's Practical Dairy Husbandry*, *Willard's Practical Butter Book*.

Keep the Animals Warm.
The first blast of wind from the north is a reminder that animals, however tough and hardy, need shelter in winter. It will take less food to keep farm stock over winter in warm stable than when exposed to severe cold. Of course, good wood, stone or brick barns and stables are expensive, and there are many farmers, especially in the recently settled district, who have not the means to build such structures, out there is no one too poor to furnish some kind of a shelter for their animals. If a man cannot afford to build what he desires, let him do the next best thing, and build something which will furnish shelter even if it is nothing better than a shed with solid walls, and a roof of brush or corn-stalks. All attempts at elegance or extra convenience may be left out of the question where a man's purse is light; still, it is economy to keep all farm stock sheltered from cold, wind and storms in winter, even if the owner does not possess enough of the human feelings to care for their comfort.

More than one half of all the diseases and parasites which infest farm stock are direct result of neglecting to furnish them with proper food or shelter during cold stormy weather. Cattle of all kinds; when forced to remain in muddy, wet yards, during cold weather, are liable to various diseases of the feet. All kinds of farm stock are liable to take cold when exposed to storms, and from this comes a weakened constitution, which invites various kinds of diseases and parasitic insects. Weakened vitality or vigor in either plants or animals opens the way to hundreds of parasites which are resisted by the healthy individual, and the farmer should keep his animals in a condition which enable them to ward off the attacks of such enemies. He has only to think of his own comforts, such as nutritious food and warm clothing, and consider how the reverse of these conditions would affect him, to understand how it is with his animals.

It is unnecessary to go into details in regard to the building of sheds, stables, or other kinds of structures for sheltering stock in winter, as every man knows best what materials are at hand or within reach suitable for such purposes, but the fact should be apparent to all breeders of animals that in all climates some kind of protection is required. Out on the plains and prairies of the West and Southwest it is often asserted that sheep need no protection in winter, and it is even claimed by some that they do better without it than with it; but the frequent heavy losses by cold, starvation and diseases plainly show that all this talk of mildness of climate is all error. Sheep and other farm stock may live through the winter without artificial shelter or more food than can be obtained on the range in those favorable localities, but they would certainly do better with added comforts every winter, and occasionally heavy losses might be avoided by making the necessary provision to protect and feed them when severe storms prevail.—*Weekly Sun*.

EXPORT OF SHEEP.—For the past two or three years in no enterprise has progress been more marked than in the exportation of Canadian beef and mutton to the British market. At first the shipments were few, but so rapidly did the scheme find popular favor that now scarcely a week passes in which there are not sent large quantities of Canadian cattle and sheep for Liverpool. The latest shipment announced is a flock of sheep composed of 4,000 animals, 2,000 of these were sent by the Grand Trunk Railway from Toronto on Tuesday. At Montreal they were transferred to the steamship *Memphis*, which sailed yesterday for Liverpool. The remaining 2,000 will be sent by the same route for Montreal on Saturday, and will be conveyed from that port by the *Brooklyn* for England. The animals, which are in the condition, are chiefly of the Cotswold and Leicester breeds. Their estimated average weight is 150 lbs. The retail sellers realized about 4c per lb. on their sales, or 86¢ per head for the sheep disposed of. Nearly all these animals were purchased in the neighborhood of Toronto, and the shipment was entirely made up of animals raised in Western Canada.—*Canadian Farmer* Nov. 15.

Prof. Roberts, by means of accurate balances, has ascertained that a bushel of timothy contains 57,000,000 seeds (we omit all but the round numbers); a peck to the acre gave 382 to the square foot, and a quart to the acre gave 41 to the square foot. A bushel of clover seed contains 15,000,000 seeds, being nearly four times as large as timothy seed, and one peck to the acre is equal to 87 seeds to the square foot, or one quart is 10 seeds to the square foot.

Some Things about Milk.
There are a few facts concerning milk which may be stated as certainly known. The first we shall refer to is, that milk is composed of fluid constituents and organic globules, and that these vary in different samples of milk, often so much so as to give a character which can be distinctly recognized and requires distinct treatment. Second, that the specific heat of the globules and the fluid portions differ, so that the action of reduction or increase of temperature acts differently on milk than on a homogeneous fluid. The albuminous portion of milk is in a fluid condition; the fatty portions are contained in these globules. According to Fleischmann, the average specific heat of milk is 0.847, while that of cream is 0.78; the point of maximum density of milk about 33° F. Let us see what this means. Many years ago it was discovered by Boyle, that if two like bottles were balanced before a fire, the one containing water and the other quicksilver, their temperature did not rise similarly, but much more rapidly with the latter than the former. This fact has been studied, and this capacity for heat formulated for many bodies; thus, in the fluids given the same quantity of heat required to raise the water 1° in temperature, would raise and equal weight of quicksilver 29°. If oil were used also, it would be raised 2°. Now, when cold water surrounds a can of milk, the temperature of the water affects equal out of the liquid portions and the globules differently in the same time. If the water were warmer than the milk, and its temperature be kept uniform, while the water of the milk was being raised 1° in temperature, the oil of the milk would be raised 2°; if of equal quantity, and conversely, the water being cooler than the milk, the fluid portions would be cooled 2°, while the globules of oil were being cooled 1°. Thus far we have not been exact, but have spoken of water as if pure, and oil as if olive oil; but we shall find the same fact true, that it takes longer to cool down the milk whose specific heat is represented by 0.847 than the cream whose specific heat is 0.78, and longer still the water if the can contained water instead of milk. We would also find that if water were attempted to be cooled instead of milk, that more heat would be required; or, in other words, more ice must be used.

We may give now the following physical law: *Different bodies require different amounts of heat to warm them equally.*
In applying this to the setting of cream, we note that the specific gravities of the globules and the fluid portion of the milk must be changed with their changes in temperature, and that the even cooling of the whole mass of milk must result in at first increasing the *density* of the fluid portions, and that this condition of things will continue until the temperatures become uniform. The practical application of these facts would be, then, that under a process of uniform cooling the cream would be expected to rise with rapidity, and many more of the small globules would find the surface than under a system in which the cooling application had no part.—*Dr. E. Lewis Sturtevant*.

A SUCCESSOR TO PARIS GREEN.—A quality of insect poison, called by the manufacturers "London purple," designed for destroying potato beetles, and experimented with the Iowa Agricultural College, has been proved on trial to be valuable for this purpose. The Professor of Horticulture reporting upon it, says that the virtue of London purple, as in the case of Paris green, lies in the arsenic it contains. It advances over Paris green, as stated by the Professor, are its extreme fineness permitting it to be mixed with water; its adhesiveness; its purple color, which enables one always to detect its presence on leaves, even when it exists in but infinitesimal quantities, and its cheapness. Should further experience and a more extended use of London purple confirm these first reports in its favour, this material will doubtless soon appear in considerable quantities in our markets, where as yet it appears to be almost unknown.

The farmer then has four things to bear in mind. First, to keep his machine, the farm in good condition; second, to get the most from it, but at the same time to supply it with plant food, in the right form, in proportion to the crops removed; third, to take good care of the growing crops while in the process of manufacture; and, fourth, to sell them to the best advantage. Looking at it in this light, is not the farmer a manufacturer, and his farm a wonderful machine.

Give your hogs a rubbing post in some accessible part of their inclosure it facilitates their keeping clean and seems to afford them much satisfaction.

Value of Sheep as Manure Maker.
Pasture alone is not sufficient to maintain sheep in profitable thrift, especially in the approaching breeding season; in addition, a daily ration of grain is needed. When the pasture is poor, the quantity of grain should be liberal. With good pastures, a pint of mixed corn and oats, rye and buckwheat, is little enough with poor pasture, half as much again would be required to keep full grown sheep or growing lambs in proper condition. In some sections cotton-seed meal is coming into great favor for feeding sheep on poor pastures, a half pint being fed to each one daily. It is a nutritious food, and makes an unexpectably rich manure; and the quality of the dung of animals as a manure always depends on the quality of their food; for the dung is only the food changed by the process of digestion, less the portion taken into the system as nutriment. There is a mistaken idea, which has been fostered by writers who know little about sheep that these animals have the unusual capability of living upon weeds, briars, brush and coarse herbage, and of not only getting fat thereon, but of greatly adding to the fertility of the poor soil. A sheep, however, has no power to make something out of nothing. By reason of its fine mastication, and its vigorous digestion, it can, perhaps exhaust its food of more of its nutriment than any animal, except a fowl, and its manure, by reason of its finely comminuted condition, rapidly decomposes, and is at once effective as a fertilizer. To make our flock thrifty—to secure strong lambs, heavy fleeces, and good mutton—we need to feed the sheep and we must do this if we would turn our flock into vehicles for spreading manure and enriching the soil. It is a fact, that sheep supplied with a regularly given ration of one pint of grain per day, besides pasture made in 80 days, 30 pounds each more weight than a flock on good pasture without grain; and the value of the extra flesh more than paid for the grain. In addition, the fleece made grows, a large proportion of the ewes conceived twins, and the lambs came stronger and were better supplied with milk. And, as a matter of course the droppings of these sheep must have been richer in fertilizing value than those of poorly fed sheep. The good shepherd careth for his sheep, and he has his reward in the richest return that can be made of any of our farm animals for the food and care given. Instances of the successful use of sheep as fertilizers of the soil are given so frequently, but without any reference to the methods of their use, that it has become a general belief that nothing else is needed to make a poor farm rich. But if any advice is laid to try it for himself, both he and his flock will come to grief.—*American Agriculturist*.

TOXIC FOR FOLKS.—Some kinds of tonic in the drinking water of poultry should at this period of the year be used, for their benefit, and to aid their digestion.
During the moulting process, and while the new coating of plumage is growing—though not actually diseased, as some persons suppose is the case, from their languid and changed appearance—they are "out of condition" decidedly.
Common tincture of iron, a few drops daily, mixed with fresh water given them is excellent. Where this cannot be readily had, half a dozen rusty iron nails in the bottom of the drinking vessel, will serve this purpose well.
A bit of arsenic within the fountain or bucket they drink from, is very good. And in cold weather—when the moulting season is passed—a pinch of Cayenne pepper in the water is desirable and beneficial.
Whatever is used for this purpose, it should be placed in their drink afresh, when the water is changed every day. Otherwise it will make their drink offensive to them—especially in hot weather.—*Poultry World*.

SHEEP IN PASTURES.—The sheep bites closer than the ox. He was designed to live where the other would starve; he was designed in many places to follow the other, and to gather sufficient nourishment where the ox would be unable to crop a single blade. Two purposes are answered by this: All the nutriment that the land produces is gathered from it, while the pasture is made to produce more herbage than by any other means it could be forced to do; the sheep, by its close bite, not only loosens the roots of the grass and stimulates their spreading, but, by putting off the short suckers, causes the plant to throw out fresh, more numerous and stronger ones, and thus improves and increases the value of the crop. Nothing will make more expeditiously or effectively a rich permanent pasture than is being occasionally and closely eaten by sheep.

THE QUANTITY OF LIME TO APPLY.—A farmer in New York State who has had a good deal of experience in using lime, writes to the *Country Gentleman* on the mooted question "the quantity to apply":
I have used lime on my farm in Tioga county, N. Y., for twenty years, using a car load per year, and I consider it the cheapest fertilizer in use for our lands. Our soil is a gravelly clay loam, with flat stones which are destitute of lime. Beech, maple, and hemlock timber abound. I have paid from 8 to 12¢ cents per bushel for refuse lime from the kilns, and for lime after it is slacked, and 15 to 25 cents for stone lime before it is slacked. In addition, it costs me railroad freights ranging from one to three dollars per ton.
I find it beneficial to all crops, but the most benefit is on clover, meadow, and pasture lands. A meadow sown this fall, with six bushels of slacked lime per acre, will show the benefit next spring at a mile's distance, in its earlier start and greener colour. We always sow it before wheat, but we also sow phosphate and potash or ashes. Lime is not only a food to all crops in larger or smaller quantities, but it neutralizes the acidity of the soil, feeds the clover and grass, and drives out sorrel and daisies. It also warms the soil and helps decomposition of vegetable matter.
We do not perceive the necessity of sowing it in so large quantities as 25 to 100 bushels per acre, but find it more profitable to sow less at a time, and more frequently. Lime dissolves very slowly in water, and it takes 1,000 pounds of water to hold one pound of lime in solution. When sown in large quantities much of it washes away or sinks too deep in the soil to be for the rains dissolve it and fit it for plant food. We sow only from five to ten bushels of finely slacked lime per acre, and think that quantity is all that it is profitable to sow.

MANURE FOR ORCHARDS.—Wood ashes are doubtless excellent for orchards, but instead of being put round the trees they should be spread over the whole land. But where are the ashes to come from in this region? We have little or no wood, and of course little or no ashes. In our experience we have learned one thing in regard to orchards as well as fruit trees of every kind that we have cultivated, and we believe the principal can be applied pretty much to everything that grows upon the earth, which is, that the application of manure as for other portions of the land used for raising of wheat and corn. It is the neglect to do so, in connection with the general negligence with which orchards are treated in many sections, that make them unprofitable and to become worn-out prematurely. And as to the kind of manure with which our orchards ought to be treated. While any kind, almost without exception, will prove of advantage, there is none in the world to be compared to stable or barn-yard manure. A liberal application of this only every third year, with careful pruning and scraping of the trees, and fermenting out the borers, will make a prodigious change in an orchard. Autumn, even in December, if the ground is not frozen, is perhaps the best time to apply it. *Germania Telegraph*.

The Horse's Foot.
Q. What's the use of the frog?
A. It serves to expend the foot and support the tendons and the leg.
Q. How is it best enabled to do this?
A. In order to do this they must receive the natural pressure of the horse upon it, and also have the natural packing that the earth furnishes of soft material, such as earth, dust, grass, roots, gravel, &c. It supports the navicular bone, which bone receives its sole support by the pressure of the frog?
Q. There are two frogs, are there not?
A. Yes; the outside and inside frogs, or sensitive and insensitive, although the sensitive is only the interior portion of the insensitive.
Q. Does the foot perspire or sweat?
A. It does when in a natural state.
Q. In what condition does it not sweat?
A. When fevered; or when the sole of the foot is dried up, or coated over with scaly formations.
Q. How can you keep a foot from getting fevered?
A. By giving it a natural bearing over the entire surface of the foot; also, by giving the several bones a proper angle.
Q. What are the bones of the foot?
A. Coffin, or base bone; navicular and little lower pastern.
Q. What makes a foot contract?
A. By depriving the frog of pressure and the foot as a whole from the packing and thereby of the outward pressure its formation requires.
Q. Is a contracted foot painful?
A. Very much so.
Q. Why painful?
A. By stoppage of circulation, and because the walls of the hoof are brought inward until they press against the sharp edges of the coffin or base bone of the foot, so that the delicate laminae are inflamed; also, the pain caused by stoppage of circulation, and contraction passes up the tendons of the leg, and often lodges in the shoulder, which is often as sore as the foot itself.
Q. What makes the sole of the foot drop or become binged?
A. Because it has no proper support by reason of its being lifted up by the shoe that is nailed around on the wall of foot. The whole weight of the horse is thus delivered upon the arch of the sole directly under the coffin bone, and little by little is forced downward, the edges are separated from their connection with the walls of the hoof, and the entire strength of the member gone.
Q. What is to be done with a dropped sole?
A. By putting a gentle but steady pressure upon it, and so gradually and painlessly forcing it up and back to its proper position.—*Golden Rule*.

LICE ON SWINE.—The process of eradication, says the *Western Rural*, should begin before the weather gets too cold. There are many remedies against lice; but whatever remedy is used should be applied more than once, which of course causes much trouble where there are a large number of hogs infested. One reason why repeated applications are necessary is, that the hogs are apt to pick up lice anew from the ground and rubbing places; another reason is that though the remedies applied may kill the lice, they do not affect the nits; and as these remain intact, and hatch within a week or ten days, a new crop of lice appear on the swine from this source. Whatever remedy is used, it should be applied all over the body. We will mention two remedies, either of which is effective and comparatively cheap. Take one part of benzine, six parts of soft soap, and fifteen parts of rain water; mix thoroughly and apply with a stiff brush. Or, take one gallon of kerosene to each five gallons of water, apply as the former remedy. Give the hog pens a thorough cleaning out. Remove all offending, old wood-work, place it in a heap and burn it. Treatment of this kind will be of no avail, if general cleanliness is not attended to. All parts wherewith the hogs have been in contact, the scantling and posts of the styes, or inclosures, as well as the troughs, the walls of the piggery, or sheds, etc., all should be scraped off or scrubbed with boiling hot water, and thereafter be given a good coating of white-wash. The floor of the pens should be sprinkled once a week or oftener with plenty of ashes. It will be necessary, in order to insure a successful eradication of the vermin, to repeat one of the remedies mentioned once weekly, in three successive weeks at least. When once lice in numbers have infested hogs, nothing but persistent warfare and cleanliness will rid them of these vermin. The hog-pens ought to be whitewashed once a month.

MANURE FOR ORCHARDS.—Wood ashes are doubtless excellent for orchards, but instead of being put round the trees they should be spread over the whole land. But where are the ashes to come from in this region? We have little or no wood, and of course little or no ashes. In our experience we have learned one thing in regard to orchards as well as fruit trees of every kind that we have cultivated, and we believe the principal can be applied pretty much to everything that grows upon the earth, which is, that the application of manure as for other portions of the land used for raising of wheat and corn. It is the neglect to do so, in connection with the general negligence with which orchards are treated in many sections, that make them unprofitable and to become worn-out prematurely. And as to the kind of manure with which our orchards ought to be treated. While any kind, almost without exception, will prove of advantage, there is none in the world to be compared to stable or barn-yard manure. A liberal application of this only every third year, with careful pruning and scraping of the trees, and fermenting out the borers, will make a prodigious change in an orchard. Autumn, even in December, if the ground is not frozen, is perhaps the best time to apply it. *Germania Telegraph*.

AGRICULTURAL EDUCATION.—To farm profitably one must think correctly, and correct thought comes from reflection and training. It is the various folly to expect from the recent graduate a trained experience; but we should ask for a trained mind which can quickly receive the teaching of experience, and fit it for profitable uses. We do not ask, for our part, for our colleges to graduate men educated to act from principles, and to think correctly, and in whom the charms of a country life and the possibilities of a farming career have taken root. When farming, practical farming, has the sympathies of an educated class of men, there is everything to be hoped. When men trained to think, and whose thought is trained to take expression in action, possibilities of our soil and location are to become developed to an extent little realized. A class of educated farmers means greater opportunities for the common farmers whose education has been derived from toil—some experience and the conflict of trials. It means better and more practical lectures, more useful agricultural societies, a higher toned agricultural press, the exclusion of dead-beats from agricultural influences, and a healthier tone in agriculture generally. Education brings self respect, and respect draws to itself the respect of others.—*Scientific Farmer*.

Give your hogs a rubbing post in some accessible part of their inclosure it facilitates their keeping clean and seems to afford them much satisfaction.