

# THE PRAIRIE FARMER

## A Weekly Journal for

### THE FARM, ORCHARD AND FIRESIDE

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"FARMERS, WRITE FOR YOUR PAPER."

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#### THE ORIGIN OF SOILS.

I hope you will excuse a short criticism from an old-time co-worker and brother farmer, in your article in issue of 12th ult., "Elementary Forces in Agriculture." I am of the opinion that the writer has surely struck a rock. The article as a whole is of the genuine orthodox order, and is a move in the right direction, and I must admit is cleverly worded. In the third paragraph are these words: "Air, water and frost are the three great disintegrators. It is these three agents that primarily broke down the rock formation of the earth, for all soils were originally solid rock." The last sentence we conclude needs some additional proof. If you have anything to substantiate this assertion please let the readers of the PRAIRIE FARMER have the light so shaded as to shine on their pathway. We claim to have a far better showing in Missouri of the primitive rock formation than you in the Prairie state, yet I feel sure not one intelligent farmer, out of a thousand in either Illinois or Missouri, can be made to accept that plank in the agricultural platform.

While it would be impossible to answer the very pertinent question of our correspondent understanding in an ordinary newspaper article, we may at least point to authorities which should be satisfactory, and also show how the basis of soils are formed from rock, and also that soils differ in quality according to the composition of the rocks from which they are formed.

Any good geological work or any complete cyclopedia will show the origin of soils from previous rock formation, yet we must go beyond mere geology, or rather follow the lead given, to enable us to arrive at a minute classification of soils. So far as fertility is concerned, it is due not only to the component parts but also to mechanical structure. The great fertility of the soils of the West is due to their exceeding diversity, and also to the large number of rock elements of which they are composed. In the formation of fertile soils limestone, sand-stone and clay are the predominating elements. Lime is the constituent of calcareous soils, and is represented by chalk, gypsum and all calcareous beds; siliceous is the constituent of flint, quartz and sand stone, and alumina the constituent of clay. Lime is the oxide of calcium and calcium is the metallic base of lime. Siliceous is silicic acid generally impure, and silica is silicic acid in a state of purity. Alumina consists of two parts of aluminum and one part of oxygen; aluminum again being the metallic base of clay, clay being composed of alumina and silica with water. Rocks are more nearly related than is generally supposed, nineteen-twentieths of the mineral earths being composed of the three substances named above—lime, silica and alumina, with the addition of magnesia and iron.

Soils consist of organic and inorganic materials. All organic matter may be resolved into the four gases, carbon, oxygen, hydrogen and nitrogen. The most useful portions of plants are the organic—starch, sugar and gum—largely composed of carbon; and gluten and albumen, nitrogenous elements. The inorganic elements are chlorine, iodine, sulphur, the latter producing with hydrogen, sulphureted hydrogen, and with oxygen, sulphuric acid; and in combination with metals produces sulphurets—phosphorus, potassium sodium—the latter forming soda in combination with oxygen, and common salt in connection with chlorine—calcium—forming lime in connection with oxygen; magnesium, aluminum, silicon—this latter forming silica in connection with oxygen; iron and manganese. All these with the exception of iodine would seem to be more or less necessary to all cultivated plants.

The three substances, lime, clay, and sand, mechanically combined, all originally existed as rock, the four gases heretofore named forming organic matter, and important constituents of rock; and eleven or twelve of the inorganic substances mentioned, chemically combined, and also found in rocks, form the basis of our most fertile soils; and, the soil is more or less fertile according to the soluble state in which they are found in the soil; for if not in a soluble state they cannot be taken up by plants. A soil may be rich in these elements in an insoluble state and be infertile, or exceedingly fertile if they be in a soluble state. Water is the great solvent in nature, oxygen the great destroyer and again the builder up, and frost the great disintegrator.

Thus have we sought to answer your question in a condensed form. If you

wish further light, you may get it quite definitely stated in Johnston's "How Crops Grow" and "How Crops Feed." These books will cost \$2, each, post-paid. After reading them you will probably wish further light in the direction stated in the introduction of this article. A man may become a good farmer with but little reading. The time consumed however in the laborious elucidation of subjects well known, by means of tedious experiments, is time needlessly spent. Since you may often find the results of years of experiment crystallized almost in a paragraph. The great value of the real, live agricultural newspaper, consists, in the practical advice it may be able to furnish, and its timely suggestions upon what is constantly coming up new in agricultural art and the manifold interests connected therewith.

#### AGRICULTURE IN GREAT BRITAIN.

Returns to the secretary of the English Board of Trade for this year, which are very full and voluminous, show that for the year ending June 4, the people in England as in Illinois hesitated to give returns thinking that they were intended as a basis for taxation. It should be needless to remark that there is no connection whatever between the two. From the returns we condense as follows: The total quantity of land returned in 1878 as under all crops, bare fallow and grass, amounted, for Great Britain, to 31,855,000 acres. For Ireland the returns obtained by the registrar-general show a total of 15,345,000 acres, and for the Isle of Man and Channel Islands the totals are respectively 95,223 acres and 30,439 acres. Thus for the whole of the United Kingdom the cultivated area in 1878 was 47,327,000 acres, exclusive of heath and mountain pasture land, and of woods and plantations. In Great Britain the area returned as under cultivation has further increased by 142,000 acres since 1877, and by more than 1,500,000 acres since 1869, two-thirds of this increase, or 1,047,000 acres, being in England, 216,000 in Wales, and 252,000 acres in Scotland. In Ireland there is a further decrease of 82,000 acres in the cultivated area, last year's decrease having been nearly 300,000 acres.

The wheat crop of the United Kingdom aggregates 3,382,000 acres. Under the head of corn crops, small grain, beans, etc., the Kingdom for 1878 had 11,000,000 acres. This is 1,000,000 acres less than in 1869.

The small area cultivated in flax in England is about the same this year as last. In Ireland this area has declined to a very considerable extent. Hops in England show a small increase the area planted being 72,000 acres.

Agricultural horses have increased in numbers, but not so but that 30,524 were imported in 1877, and 21,000 for the first eight months of the present year. The falling off of horned cattle in 1877 has not continued this year. The number of milch cows is the same, and other cattle show an increase of 1 per cent. Pigs have declined 1 per cent. in England and 13 per cent. in Ireland; sheep have also declined in number, owing it is said to the favorable season for fattening earlier than usual. Lambs show an increase of 3 per cent., the lambing season being reported as favorable almost everywhere.

#### ALFALFA AS A FORAGE CROP IN COLORADO.

J. Max Clark, of Greeley, Colorado, writes to the *Tribune* of that place a lengthy and entertaining article on his experiments with alfalfa, or luzerne, from which we extract the following:

"It is frequently mentioned as being able to sustain itself in the most protracted droughts, thus inducing the idea among those unfamiliar with its cultivation that it requires but little water. This peculiarity, however, is only seen in the plant when its roots, of enormous size and length, can reach a copious and unvarying supply of moisture below the surface; water it must have, and in such quantities, too, as rarely falls from the clouds in any temperate climate. This, as far as Colorado is concerned, ought to set at rest any speculation as to the ability of the plant to sustain itself on our bluff lands for pasture without irrigation.

"The Eastern seedsmen give from eight to twelve pounds of alfalfa seed as the quantity necessary for an acre. As usual in any matter interesting us, they

know nothing about it. Never less than twenty pounds should be used, and twenty-five is better. It should never be sown with any other crop. It doesn't pay to do this in any country, and it won't answer at all to do it in this, because, for a short time after appearing above the surface of the soil, alfalfa is a very tender plant, and its roots, soon to become so strong and large, not yet having penetrated any considerable depth, the vigorous growing wheat or oats will sap the soil of all moisture below its reach, and it will perish before getting a foothold.

"Many persons, knowing nothing of the plant but what they have heard from California reports, and imagining that it will thrive without water and yield astonishing returns in any conceivable locality where enough soil can be found to cover the seed, sow it on rough, gravelly, uneven pieces of ground, which, by reason of difficulty in applying water, have been found unfit for anything else. This is a great mistake, and is about equivalent to throwing away the seed. It is because so small a piece of land, properly situated and well managed, can be made to produce such astonishing results that the best lying piece of land on the place, and the richest, should be selected. It should be ditched before sowing the seed; the ditches should be plowed as straight as possible for future convenience in cutting the crop; should be shoveled by hand, with great care to place the dirt with regularity on the banks, and the seed should be sown to the very water line, so that the clover may occupy all the land to the exclusion of the weeds; the land should be harrowed prior to sowing the seed, unless quite mellow after the plow. It should be sown broadcast, and may be harrowed in with any ordinary harrow, as, being unlike other grass seeds in this respect, it will come up through several inches of mellow soil. It should not be sown before the middle of April or the first of May, because sown earlier it is liable to come up and be killed by the high winds or heavy frosts."

#### HAIR GRASS—A NUISANCE.

I send sample of grass for name. Is it an annual? It is spreading rapidly. Seems to grow better in the shade than any other grass I know of; is very hard to cut with scythe. Some are getting alarmed, fearing it will run out other grasses on lawn and door-yard; not bad in cultivated grounds. M. B. MANTENO ILL., Oct. 30.

Answer:—The specimen was sent to Prof. W. J. Beal, of the Michigan Agricultural College, who replies as follows: "The grass in question is *Mulenbergia capillaris*, (hair grass) and a nuisance. I have received six or more species of this genus for a name within a few years. In several cases the person sending has feared it because it was spreading and appeared troublesome. I have not heard, however, that it has amounted to much except in the shade of trees. None of them are annuals, but have underground stems which live over winter to shoot up the next spring. This is the first specimen received of this species."

#### STAINED BARLEY.

In relation to damage to barley from discoloration in the field, or from getting wet and matting in the stack, the *Brewer's Guardian*, an English journal, says: "Barley damaged in this way by wet is not suited for malting, although by careful manipulation it is possible to establish a proper germination. If the barley has only got wet in the course of harvesting, there is not so much fear of bad results, as the drying influence of the atmosphere will remove the superfluous moisture; the great danger is that the barley may heat after being stacked. In this case the grain will probably commence to germinate, and after it has once sprouted and been checked, no efforts of the maltster will avail to produce a fresh germination. Barley which has been saturated with wet is liable to be covered with microscopic fungoid growths, and the stained appearance is due to these; in the subsequent processes of malting and brewing mould develops, and, as a consequence, lactic acid is formed. Although it is quite possible to convert stained barley into malt, yet it is not advantageous to make the attempt, for experiments have shown that malt made from partly-germinated grain never yields the same amount of extract as that from sound barley. As to the alteration in the constituents of the grain, we are not aware of any investigations bearing on the point; but probably

there is a slight development of lactic acid, and some change effected in the composition of the albumenoid bodies, which destroys the vitality or power of germinating originally possessed by the barley."

#### BARRELING APPLES.

Nothing is gained by the frauds which are attempted to be practiced in the popular way of barreling apples—nice fair ones at each end of the barrel and knotty, and small and indifferent ones in the middle. It has been practiced so long, that no one expects anything else. But if some one would put up honest barrels of apples, by sorting and carefully selecting, in a few years by branding, any fruit grower could establish such a reputation that his apples would command double price. The present way has become too thin a fraud to be longer practiced by any good man. The right way is to carefully sort those uniform in size and quality, and place in clean new barrels carefully by hand; begin packing by placing a tier of apples with their ends to the closed head of the barrel, then fill up without bruising the fruit; shake down thoroughly, and fill the barrel so full that the head must be pressed in with a lever, flattening the last tier of apples. The fruit must be pressed so firmly that it will not move in handling. After heading up, place the barrel in some cool, shaded position, there to remain until in danger of freezing; finally remove to a dry cellar or fruit-room, where a temperature just above freezing is maintained. Packed in this manner apples will keep soundly until the season of ripening arrives, when they should be consumed.—*Iowa State Register*.

#### CORN, WHEAT AND RYE.

It is gleaned from the current report of the National Department of Agriculture that the products, acreage and value of the corn crop in the ten leading corn-producing states for 1877 was as follows:

STATES.	Bushels.	Acres.	Value.
Illinois.....	290,000,000	8,985,517	\$75,400,000
Iowa.....	165,000,000	4,800,000	39,000,000
Minnesota.....	103,000,000	3,551,724	27,310,000
Kansas.....	98,000,000	2,709,589	29,769,000
Ohio.....	91,000,000	3,075,355	38,800,000
Indiana.....	86,000,000	2,400,000	32,610,000
Kentucky.....	59,000,000	1,953,396	19,040,000
Tennessee.....	50,000,000	2,200,000	20,300,000
Texas.....	49,000,000	2,041,967	21,070,000
Pennsylvania.....	41,140,000	1,346,000	20,970,000

In the average yields of corn per acre, only one corn-producing state (Nebraska) reports a larger average than Kansas. The yield per acre in Kansas is given at 36.5 bushels; Nebraska, 33; Illinois, 29; Iowa, 32.5; Missouri, 29; Ohio, 31.5; Indiana, 30; Kentucky, 30.3; Tennessee, 25; Texas, 24; Pennsylvania, 33; Michigan, 31; Wisconsin, 28; Minnesota, 24; California, 30; Oregon, 26; Arkansas, 24.

The rank of the eleven wheat-producing states for 1877 is placed as follows, with the product, acreage and value of the crop:

STATES.	Bushels.	Acres.	Value.
Iowa.....	87,810,000	2,697,584	\$32,894,700
Minnesota.....	83,294,546	3,801,516	30,257,144
Illinois.....	83,000,000	2,000,000	34,330,000
Ohio.....	80,000,000	1,733,333	32,240,000
Indiana.....	71,000,000	1,986,353	27,730,000
Wisconsin.....	69,000,000	1,466,666	30,485,000
California.....	62,000,000	1,212,121	26,800,000
Michigan.....	61,000,000	1,200,557	26,000,000
Missouri.....	50,000,000	1,438,571	20,000,000
Pennsylvania.....	48,000,000	1,400,000	27,732,000
Kansas.....	44,000,000	1,066,667	11,808,000

The product, acreage and value of the rye crop in the ten leading rye-producing states is as follows:

STATES.	Bushels.	Acres.	Value.
Pennsylvania.....	3,400,000	242,000	\$2,246,000
New York.....	3,300,000	210,000	2,275,000
Illinois.....	2,814,000	198,000	1,222,000
Iowa.....	2,700,000	174,000	1,400,000
Wisconsin.....	2,400,000	120,000	897,000
Kentucky.....	1,125,000	96,338	697,500
Massachusetts.....	730,000	46,431	381,600
Virginia.....	585,000	53,610	286,600
Indiana.....	540,000	36,000	304,400
New Jersey.....	62,000	36,372	39,500

In the average yield of rye per acre Oregon ranks first, producing 22 bushels; and Kansas ranks second, producing 20 bushels. Then follow Illinois, Vermont, Wisconsin and Michigan, in the order named.

#### TRAM ROADS FOR WAGONS.

Among the elements of rural economy a cheap and convenient means of conveying farm products to market is of so much importance that the progress or decline of any district of country often depends upon them. Within a circuit of thirty miles around Chicago, although various railroads intersect the area, many farmers still prefer driving their teams to town with what they can haul on common roads.

The least cost of hauling wheat to Chicago, fifty miles, on common roads, may

be placed at 16½ cents per bushel. The average cost of hauling freight on railways for the same distance may be placed at about 5 cents per bushel. To this must be added 1 cent for elevator charges, and commission, making a total of 6 cents per bushel. Provide an iron track on which the wheels of common wagons can run, with the horse path made firm, and for the same distance wheat can be hauled for less than 4 cents per bushel.

Any person visiting Chicago may see loads of 100 bushels of wheat easily hauled on the wooden pavements. Yet wooden pavements offer a resistance to wheels more than three times greater than that of the street railway tracks. A tramway built with low grades, and adapted to both steam and horse power, and operated under a system that would prevent unnecessary obstruction, is in my opinion not only feasible, but the cheapest practical means of overcoming the disability arising from our common earth roads.

A tram-road differs from an ordinary railway in that the rails are so constructed that the wheels of common wagons may run easily on them without danger of rolling off, and the grading and bridging being placed at \$1,000 per mile, the road may be constructed for \$5,000 per mile. On such a track locomotives constructed for the purpose may be as easily operated as horses, and anything a farmer has to sell may be hauled direct to any market on the line of road. A tram-road forty-five miles in length would accommodate the travel accruing from 207,360 acres. The road, at \$5,000 per mile, would cost \$255,000, or an assessment of about \$1 per acre to the farmers who might own the road. That some feasible plan for getting easily and cheaply to market has been a want long felt by our farmers there is no doubt. The want of proper material for making hard road-ways in the prairie region of the West is indisputable. The value of tram-roads has long been known, and the writer presents this plan for consideration as one of the feasible means of cheap transportation where the travel will warrant the cost of construction. CHICAGO, Nov. 4. R. R. MORGAN.

#### OUR PUBLIC LANDS.

J. A. Williamson, commissioner of the General Land office has completed his annual report to the secretary of the interior. It shows that during the fiscal year ending June 30, 8,686,178 acres of public land were disposed of, and 8,411,011 acres were surveyed, in addition to the 721,613,748 acres previously surveyed. The total number of acres of public domain still unsurveyed is something over 1,000,000,000 acres. The disposals were mainly as follows:

	Acres.
Homestead entries.....	4,418,344
Timber culture entries.....	1,539,464
Desert land entries.....	3,053,633
Cash land sales.....	577,255
Grants to railroads.....	306,340
Swamp lands, patented.....	12,928
Other grants to States.....	21,494

These figures show a great increase in the quantity of land taken up by the class of actual settlers as homesteads, and for the purpose of timber culture.

The cash receipts amounted to \$2,022,536, being \$569,567 more than the receipts for the preceding year.

Commissioner Williamson also recommends in regard to lapsed railroad grants that congress should either declare the grants forfeited and restore the lands to disposal as part of the domain, or extend the time for the completion of the roads.

The report exhibits in detail the work done in connection with the suppression of timber depredations on the public lands, and presents a variety of information with regard to abandoned military and Indian reservations, the adjustment of private law claims and miscellaneous matters.

In conclusion, Commissioner Williamson refers to, and earnestly reiterates, former representations made by him regarding the need of an increase of the number of clerks and of amounts of appropriations for the dispatch of the constantly accumulating business of the land bureau.

#### THE POTATO PROSPECT.

As we predicted, potatoes have advanced rapidly in price, and the prospect is that they will be worth \$4 a barrel before spring, unless supplies are brought in from Nova Scotia. A great many farmers have not enough for their own tables half the winter. The season was very unfavorable for this crop; the

cold and wet weather of May injured the early plant, and the wet summer affected the vines of the later growing. They are rusty, some like the old-fashioned blight of nearly thirty years ago. The beetles were destructive, and altogether, there will be, according to present prospects, a scarcity greater than we remember ever to have seen. When the vines rust the potatoes do not keep well, as they partake of the disease. This is the case this year, although not so bad as at the period above referred to. Since then potatoes have never yielded as they did before. They used to be the great staple food for fattening hogs in the potato-growing districts of this state, boiled in huge cauldron kettles and mixed with barley and pea-meal. We must learn to eat more turnips and beets and Hubbard squashes, and take vegetable diet in the form of sugar rather than of starch.—*New York Tribune*.

#### TAKE CARE OF YOUR TOBACCO.

Some planters will work hard to raise a crop of tobacco, and after it is cured so neglect it as to cause it to greatly damage before it is ready for market. A storage barn, close and well-arranged, is almost indispensable to the safety and preservation of the crop. After the leaves and stalks have been thoroughly cured it is best to crowd it close, either in the storage barn or in the best barns on the premises, hanging on the sticks, as it is safer in this condition than if bulked down. Tobacco should never be allowed to remain in open sheds or barns to become "too high," and subsequently to mildew and mould as it is sure to do if exposed.

Tobacco, if cured bright, if exposed to a damp atmosphere soon after it is cured, will change color very soon, and, from a fancy bright, will, in a few hours, be changed to a common red filler. The best plan is, as soon as your brights come in order, to run the tobacco close together in the top of the barn, if you cannot move it to the storage house, and dry it out as necessity demands, so as not to permit the leaf to absorb moisture enough to change the color.

Much tobacco is injured in bulk by heating—being bulked down in too high order. When planters do not intend to sell in winter order, it is much safer to hang up as you strip—to be subsequently struck down in safe keeping condition. If planters have no storage barn, it is safer to bulk down on a platform resting on the lower tiers, or well elevated from the damp floors. Guard the bulks from leaks, and don't suffer your tobacco to remain bulked down long in open or insecure barns.

Never prize or market tobacco out of condition. It never pays.—"R. L. G." in *Rural Messenger*.

#### SPONTANEOUS IGNITION OF HAY

A case of what seemed to be spontaneous combustion in a hay-mow occurred at North Amherst, Mass., in July last, and the questions are asked, Are such occurrences possible, and if so, are they frequent? Without doubt it is possible for hay to ignite spontaneously, but it does not often occur. When last in England, we remember to have passed, in traveling, a farmer's premises where the hay-ricks had been burned the night before from spontaneous combustion, as alleged. That hay may thus ignite, the conditions must be quite unusual. Well cured, dry hay is always safe, but that which is imperfectly cured, or which has been exposed to rain, may become so intensely heated as to char, and ultimately to ignite. Combustion is an oxidizing process, and when the carbon and hydrogen of the hay are in condition to attract oxygen rapidly, the temperature may reach the point where flames must spring up, and then the work of destruction goes on rapidly. Whilst the danger of spontaneous combustion of hay is not great, still it is possible, and hence care should be observed in curing and storing it.—*American Journal of Chemistry*.

When we see a mowing machine (as we did several on our way to a recent agricultural meeting,) left in the fields, under a tree, or some equally exposed situation, we wonder if the laws of economy are changing, or if the cry of hard times is not a vain delusion. It would seem as though the man who will so leave an important farm implement exposed to the sudden and variable changes of the atmosphere, the effect of which is to hasten its destruction with great rapidity, has no right to lift up the cry of hard times.—*Exchange*.