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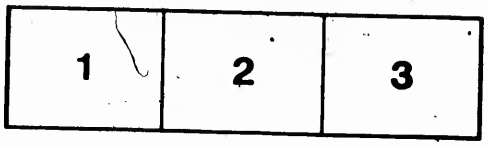

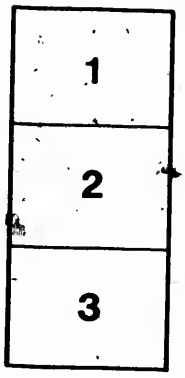

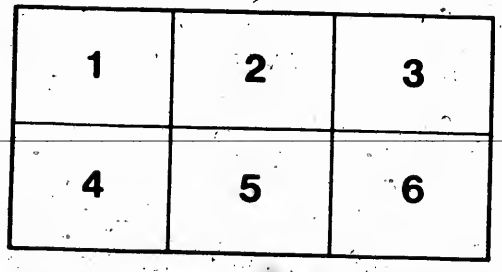

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PLASTER

AND ITS USES.

YORK PLASTER MILLS & MINES,

YORK, - ONTARIO.

THOS. MARTINDALE,

PROPRIETOR.

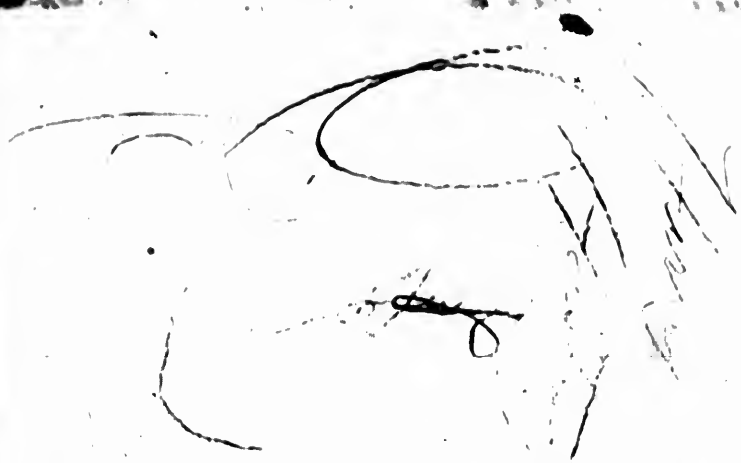
The York Plaster is the Whitest, Finest, Purest, Best and Cheapest in Canada. See Analysis inside.

FOR SALE BY

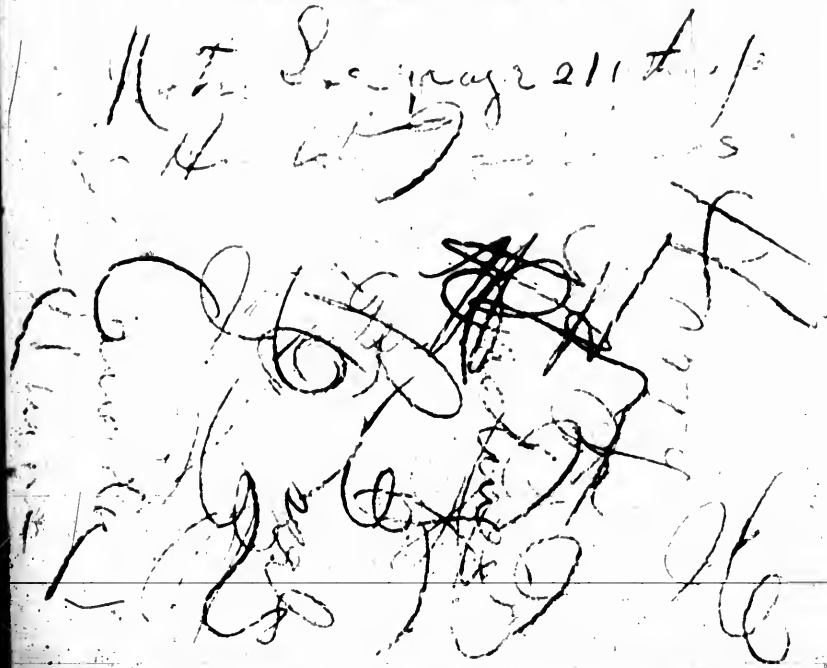
CALEDONIA, ONT.

PRINTED AT THE GRAND RIVER SACHEM OFFICE.

1880.



NOTE.—See page 21 of this pamphlet on "Hints to Farmers as to Fertilizers." It will pay every farmer not only to read it, but to act upon the suggestions therein contained.



Price of Land Plaster to Grange
$ 5,25 per ton on full cars
12 tons on board Brussels Sta

PLASTER AND ITS USES.

—:o:—

YORK PLASTER MILLS AND MINES.

—:o:—

Having again visited the Plaster Works of T. Martindale after a lapse of five years, we find, though the out-put has been very large, the Mines still remain much the same in appearance. The long, white face extending hundreds of yards in the many different workings still remains; and, from appearances will supply an almost unlimited quantity for many years to come. We noticed, in order to supply the increased demand, he has had to increase his water-power by raising the dam and enlarging the water wheels of mill, and now feels satisfied he can again supply his friends with the very finest ground and purest White Plaster in the market.

(*From the Grand River Sachem.*)

Among the most valuable mineral productions of the Province of Ontario, is that of Gypsum, Plaster of Paris; or, in chemical language—Sulphate of Lime. Though it is fitted, by various modes of preparation for ornamental purposes and use in the fine arts, as for castings, mouldings, &c., its greatest value depends upon its properties as a fertilizer, as, under favorable circumstances, it adds enormously to the productiveness of the soil, and at a comparatively small cost. To the farmer, therefore, it is of the greatest importance. Its value, however, for almost any purpose for which it may be used, but more especially for that of fertilizing the soil, depends upon its degree of purity. It is to be found in various parts of the American continent, but nowhere in greater abundance and purity than in the region of the Grand River, Ontario. But even here the quality varies very materially, differing in various beds in color and purity, and consequently in value. This fact we propose to show directly by the analysis of the most experient and competent chemists.

At the special request of Thomas Martindale, Esq., we paid a visit, a few days ago, to the York Plaster Beds, on the Grand River, opposite the Village of York, in the Township of Oneida.

This valuable deposit of Gypsum was first discovered and opened by Thomas Martindale, Esq., the father of the present proprietor, in 1840, and was worked by him extensively till his death in 1866. During that long period, a quantity, averaging about 3,000 tons a year, was taken out of the beds and shipped to various parts of Canada and the United States; and it became famous for its superior excellence and value as a fertilizer. On the death of the elder Mr. Martindale, the beds came into the possession of his son, Thomas Martindale, Esq., the present proprietor, who has continued to work them uninterruptedly up to the present time.

EXTENT OF BEDS.

The upper layer or stratum of Gypsum has a frontage of about fifteen chains on the banks of the river, and extends southerly to an undefined distance and nearly horizontally, dipping but slightly, constituting a gentle grade backwards and downwards from the river. At the present time there are not less than from 150,000 to 200,000 tons of beautiful white plaster laid bare, by drifts under the superincumbent lime stone and slaty rocks, which at the further end of the main drift, have a thickness above, including the clayey-loam surface of about seventy-five or eighty feet.

THE MINES.

The main entrance is from the River Road, by a railway with wooden rails, on which horse-power is used to convey the Gypsum in trucks, from the point in the drifts, where it is mined, to the bank of the river, where it is deposited in boats, to be taken to the Mills. At a distance of five chains from the mouth of the mine, a branch drift to the left has been extended a distance of five chains further, from which another railway is cut at right angles intersecting the main drift, and leaving a large triangular mass of plaster yet to be removed. Ten chains from the main entrance is another drift with its railway, running back into the bed to the left, a distance of five chains, and from this other drifts branch off both to the right and to the left, so that after entering the main way there are a number of cuttings, all laid with wooden rails, and leading in different directions; and from these immense quantities of the most exquisitely white and soft pure Gypsum have been obtained. From the fifteen chains in front on the River Road, Mr. Martindale's Plaster Beds widen out to twenty-five chains, and extend back to the 4th Concession of the Township, a distance of a mile and a half. This immense bed of plaster seems to be really inexhaustible; but, should it ever become exhausted, it is believed that there is a far thicker stratum below the bed not worked. The thickness of the upper stratum is about four feet and a half, and the drifts along which the railway pass are about the same width.

THE PLASTER MILLS, ETC.

Mr. Martindale's plaster mills are situated in the village of York, and command the water power of the Grand River. The Gypsum is brought from the quarries a short distance across the river to the mills, the main building of which is 40x60 feet. The store house is 60x30 feet where the ground plaster is kept, and that for the unground rock plaster is 50x30 feet. The present mill is capable of producing 30 tons a day of ground plaster. There is another storehouse at Caledonia village, five miles distant from the mill, at the junction of the Grand Trunk and Hamilton and N. Western Railways, 80x40. Another storehouse at Deans' Station on the Grand Trunk and Canada Southern, is 50x30 feet, and a fourth at the Cayuga Station of the Canada Air Line 50x30 feet. All these are under charge of the proprietor, men being stationed at each store house to attend to the filling of orders and the shipment of plaster. The Calcining Works are at Caledonia, where the plaster is prepared for stucco work, for use in the fine arts, &c. The capacity of the Calcining works is about 40 bushels a day.

Mr. Martindale has provided better facilities for the cheap handling of the plaster than are to be found at any other works in the country, and has made special arrangements for the very lowest rates of shipment to all parts of Canada and the United States.

He can therefore not only supply the best quality of plaster, either raw or calcined, that can be found on the continent, but furnish it at less cost than any other Plaster Works in Canada. Mr. Martindale himself resides on a splendid farm at York, which is, therefore, his post-office address, and he can testify to the utility of Gypsum as a fertilizer by experiments made on his own farm, during the course of many years.

—o:o—

In addition to the foregoing from the GRAND RIVER SACHEM, the following statements, experiments, and testimonials, in reference to the value of Gypsum as a fertilizer, are submitted for the perusal of farmers, and we beg of them to give the whole matter their earnest consideration, satisfied that the result will be an immensely increased product on the farms of those who may be thereby induced to give the Land Plaster a fair trial.

THE COMPOSITION OF VEGETABLE MATTER.

Some farmers who can obtain pure Gypsum at a 'minimum' price at the York mills persistently refuse to use it because it 'does' increase the growth of the crops to a very great extent—contending, without reason, that large crops exhaust the soil too rapidly, and if continued, will soon destroy its productiveness altogether. This reasoning, if reasoning it can be called, would apply in all cases to the production of heavy crops. But increasingly heavy crops can be produced year after year on the same soil, the soil growing richer and more fertile every year, if you continue the application of fertilizers—that is, if you feed the land with proper food and sufficient quantity. They who object to raising large crops seem to be altogether ignorant of the fact, that vegetation absorbs in its growth 'less than one-eighth' part of its own weight from the inorganic substances of the soil; the remaining portion being composed of water and gasses in the earth and in the atmosphere, which are absorbed by the leaves as well as by the roots. On this point 'Johnston's Agricultural Chemistry,' page 178, supplies the following facts, established by chemical analysis:

"The inorganic matter contained in different vegetable productions varied from 1 to 12 per cent. of their whole weight.

Grain.	Per cent.
Wheat	1 1-5
Rye	1
Barley	2 1-2
Oats	2 1-2
Beans	3 1-7
Peas	3 1-3

Dry Straw of	Per cent.
Wheat	2 1-3
Oats	5 1-3
Barley	5 1-4
Rye	2 3-4
Beans	3 1-3
Peas	5

	Undried.		Dried in air.
Potatoes	4-5 of 1 per cent.		
Turnips	3-5	do	2 3-5
Carrots	3-5	do	7
Parsnips	4-5	do	5
			4 2-5

	Green.	In Hay.
Red Clover	1 1-2	7 1-2
White Clover	1 3-4	9 1-3
Grass	2 1-2	9 1-2

The same work gives the gross amount of the inorganic matter or earthly substance taken from the soil during a three years' course of cropping, viz: 1st fallow; 2nd wheat; 3rd oats; if the produce of such course is 22 bushels of wheat and 50 bushels of oats to the acre, at 400 lbs. for the three years. But the wheat and oats alone would weigh 3,100 lbs., besides the straw.

It also gives the effect of four years cropping as follows: 1st turnips; 2nd barley; 3rd clover and rye-grass; 4th wheat. Assuming that the crop of turnips amount to 25 tons per acre; barley 38 bushels; clover and rye-grass, one ton of each per acre; and of wheat 25 bushels; the total amount of inorganic matter taken from the soil is only 970 lbs. to the acre in four years, while the crop raised would weigh over 55,000. Whence come this, excess of vegetable matter over the inorganic matter taken up?

In 1869, Moore, Foote & Co., Detroit, offered a premium for the best five acres of wheat raised that year in Michigan. Mr. H. E. DeGarmo, of Spring Mills, took the prize, and the following is the treatment of the soil and the result made by

MR. DeGARMO:

"The size of the field of which the five acres is part is 16 acres and 46 rods. Part of it has been under cultivation for 20 years, the balance nine years. It produced clover in 1876 and in 1877, and was fallowed in 1878. It was ploughed only once—ten inches deep—three heavy horses being used. It was harrowed twice and sown on the 11th of September. The seed was of the Delhi variety, and was purchased for $2.50 per bushel. It underwent no preparation, and the quantity sown was one and one-half bushel per acre. It was sown broad-cast; top-dressed with 50 lbs. of plaster to the acre, at a cost of $9 per ton. It received no cultivation after it began to grow; was harvested by hand and threshed with Pitts' thresher. The whole crop compares with the sample shown, and the quantity realized from the entire field of 16 acres and 46 rods was 495, being a little over 29½ bushels to the acre.

"I came into possession of this farm nine years before. It was then so worn out and impoverished that the former owner had almost abandoned any attempt at raising wheat, but was making a poor attempt at raising rye, and the crop of rye on the same 16 acres was so poor that it was not worth harvesting, and the cattle were turned in. The last crop of wheat raised on the farm before I got it estimated by those who assisted in harvesting it, did not yield over three bushels to the acre. Now, without any fertilizer, except clover and Plaster, I have no trouble in getting from 20 to 35 bushels of first quality white wheat to the acre.

"This 16 acre field is composed of one-half of an old, worn out field (having moved the fence to change the size and shape of the new field) that had been cropped with wheat after wheat for 20 years until it produced little but cockle and chess. The other half was cleared nine years ago, and the present is the fourth crop of wheat. None of it had borne any other crop to my knowledge. My manner of improving the land is to get as much clover as I can grow upon it and leave it to mulch and protect the land from our scorching sun. I do not think there was a gill of rye, cockle or chess in 500 bushels grown. There was nothing but wheat in running 60 bushels through the mill for seed. I did not see one kernel of grain of foul stuff even in the screenings. Had it not been for the cut wheat it would have been good seed right from the separator."

It may be surmised that Mr. DeGarmo's predecessor was one of those farmers who was afraid to raise too large crops lest he should exhaust the soil. It may be remarked here, EN PASSANT, that the application of Gypsum in the spring to wheat that has been partially winter-killed, sometimes produces marvellous effects in the course of a few weeks.

GYPSUM ON MANURE.

W. T. Early, of Charlottsville, Virginia, says:—

"By observation, it is concluded that plaster acts as a condenser of ammonia, which is found everywhere in the atmosphere, and in all soils to a limited extent; that it holds this most subtile and powerful fertilizer in its grasp; fixes it and gives it out to the growth of the plants as they require it instead of allowing it to pass away and remain unfixed and unadapted to plant growth.

"Again, sow upon a dung-hill steaming and giving off ammonia, a quantity of Gypsum or Plaster—the terms are synonymous. It will stop the escape of gas by absorbing it. Wait again till the plaster becomes saturated with the ammonia oil gas, and it will again begin to escape. Put on Plaster again and the escape ceases, and so on until all the ammonia is taken up and fixed. The value of the manure as a fertilizer is thus enormously augmented.

"Great losses are sustained in stables, in cess-pools, in all animal and vegetable manures by the escape of ammonia, which constitutes by far the richest part of all manures. Plaster may be most profitably employed in fixing this volatile and most valuable ingredient in all collections of manure and compost heaps, and no farmer should fail frequently to sprinkle his stables and barnyard where manure is kept in reserve for future use with plaster. Plaster, it may be added, expedites decomposition; at the same time that it acts as an absorbent of the gases while the process of decomposition is going on. "Sow Plaster on the manure heap and in the hen-house," says another very high authority, "and it will more than double the fertilising properties of the manure."

PLASTER FOR WHEAT ON CLAY LAND.

A most successful Indiana farmer, writing on the effect of Gypsum on clay land says: "I had one hundred acres of stiff clay which was in an exhausted state from continued cropping of wheat and the exhaustive power of weeds during a period of twenty years. I kept it in grass, clover and wheat, adding a little manure and applying Gypsum annually, until a crop of 35 bushels of wheat to the acre was the result." He adds: "Plastered clover plowed under as a green crop, is the best and cheapest preparation for wheat, and the clover roots where Plaster was used, penetrated the sub-soil to a depth of three feet or more."

WHAT HON. GEORGE BROWN THOUGHT OF PLASTER.

So late as March, 1860, Hon. George Brown gave his views on the use of plaster as a fertilising agent as follows: "I have been a large consumer of Land Plaster for over twenty years—many of these years to the extent of fifty tons per annum, and have not only been entirely satisfied with its singular effect on the crops, but astonished that any farmer can afford to carry on his farm without its assistance. Its effect on clover, peas, Indian corn and indeed on all leguminous crops is magical. A good dressing of it—say 200 to 300 lbs. per acre—will make all the difference between profit and loss on the crop of a field. An old complaint against Plaster has been that it has a wonderful effect for three or four years, but that the land then becomes what is called "clover-sick," and its power ceases to be felt. I think this is a misapprehension—nay, from much experience I may say I know it is so. The true explanation of the clover sickness may be found, I am confident, in the great exhaustion of the land by the large crops taken through the stimulating effect of the Gypsum, and the failure to restore the other elements of plant growth that had been exhausted by the same process. Exhaust the land by great crops, and trust to Gypsum solely for a continuance and you may be disappointed—but couple with it a good dressing of barnyard manure, and you will not complain of your crop or your land as sick.

Another objection to plaster is the disagreeable task of sowing it—burning the fingers, flying in the eyes, &c. Also that it takes a great while to sow a large surface with it, and just at the moment when the spring work demands all the strength, and more than is available to the farmer. But all these objections are met by an admirable machine constructed for the purpose of sowing plaster, made by Mr. John Watson, of Ayre, and by use of which, the laziest lout in the land can sit at ease behind the horse, with a stream of gypsum ten feet wide falling behind him with perfect regularity, and with any desired weight to the acre, at the rate of twenty acres per day.

I have always held it as most fortunate, that the vast benefits to be derived from the use of Gypsum are unknown to so large a body of our farmers; that, even those who know and confess those benefits avail themselves so little of them, and that some combined movement of Railway Companies and Gypsum Companies has not long ago been made to establish Gypsum depots at railway stations, so that it would be of easy access to all farmers over the land at reasonable cost. Nothing could contribute more to the rapid increase of the crops of Canada than such a movement efficiently carried out. It would pay the railways to carry Gypsum at the

very lowest rate of freight, in view of the increased volume of produce and live-stock freight it would secure to them. If it be true, then the man is a benefactor to his country, who makes a blade of grass grow where none grew before—what must he be who makes the half-dead-and-alive pasture fields—that we see so painfully numerous over our country—rich with green verdure."

COL. F. M. HOLLOWAY ON PLASTER.

We now come to consider another class of fertilizers, to which we shall call your attention. This is Plaster or Sulphate of Lime. It is in many parts of the country more general than all other commercial fertilizers combined. The amount required to the acre will depend much on the growing crop to which it is applied. It has been fully demonstrated by agriculturists in their analysis of the composition of plants, that an acre of clover which will yield 5,000 lbs. at two cuttings, contains about 120 lbs. of lime; timothy hay about 34 lbs.; an average of corn 25 lbs.; an acre of wheat that will yield 25 bushels, 15 lbs; an acre of oats of 50 bushels, 30 lbs.; potatoes, 9 lbs. From this we may see the relative requirements, for but one of the plant foods that are abstracted from the soil, to produce a crop of the different plants. When we take into consideration the fact that plants feed upon the gases of the earth, and these generated from definite and known substances, 'either vegetable or mineral, or both combined,' through chemical change; and when we further see that the entire body of pure plaster is but component parts of known substances, viz.: 33 of lime, 46 of sulphuric acid, and 21 of water, all positively essential in the manufacture of these gases—we must, I think, concede that the soil we till is already charged with all the mineral substances necessary for this work of generation, and that it affords all required for plant food as well as waste by drainage and evaporation constantly going on in our cultivated fields. But there is another, an advanced view to be taken of the use of Plaster, which is now conceded by those who have given the subject much thought. It is, that Sulphate of Lime or Plaster has a peculiar disintegrating influence on the compound silicates of the soil, setting free potash and magnesia for the use of the plant. By its use then, we supply the plant with sulphur and lime, and give it the means of obtaining an increased supply of potash and magnesia. You understand very well the effect on plants of a good dressing of unleached ashes; you have been applying potash to them. But if you haven't the ashes to apply, try the effect of harrowing or ploughing in 300 lbs. of Plaster to the acre, and if this does not bring the desired result, you have no hope only in the manure pile until the change comes.

What Hon George Brown thought of Plaster Manitoba

It is a theory held by some that Plaster has a powerful affinity for, and does its chief work in arresting the ammonia that is in the air, and applying it to the pores of plants for food. But this is altogether a too superficial view to take of its action. It is performing a greater work. That it will arrest and hold in a fixed state of volatile gases, is very true. Hence its special value on the the manure pile when decomposing; that it will hold in check evaporation from plants, on a hot day, is another established fact; hence corn or clover well plastered will keep green in a burning sun, while that not plastered is rolled up, wilted and nearly spoiled; that it is one of the most active agents in reducing all carbonaceous substances in plant food, is fully demonstrated by analysis, and by the intelligent use of it on all highly cultivated vegetable soils, as has been shown by many trials.

2nd. I advocate the use of plaster, not as a mere top-dressing, as has been the usual practice, but in larger quantity to the acre, and were practicable incorporated with the soil. I have the best reason for believing that we would be pleased with the result. That our failures with clover in not catching would be largely diminished, if, when we sowed our wheat in the fall, we would sow two or three hundred pounds of Plaster per acre and drill it in with the wheat.

All our surroundings point to the farm to supply the deficiency of the farm. We must, at least, exhaust its resources first. We all agree to this proposition. Our experience in using clover as a green manure, and the results flowing from it have been in the past so satisfactory, that we may conclude that the future will very soon develop a great use of all the leguminous plants for green manuring. Anything that will grow quick, produce a large bulk of vegetable matter if desirable. Some will be better than others, as they contain more ash. Were we to classify we would put clover first, millet second, although strictly not of this class of plants, peas third, and buckwheat last. These plants are all at home on our soils. They grow quick and level in a liberal feeding of Plaster; one such crop returned to the soil every three or five years would so increase the vegetable mould as to effect for good the crops of the full rotation.

If I am correct in my conclusions, and I think the testimony of science and experience largely favors those conclusions, I cannot too strongly urge the use of Plaster in a scientific way, as a means by which our farms may be made more fertile, and in so doing it will pay. The cheapness of the article and the facilities for obtaining it warrant the farmers of the country in its free use even to try experiments with it not heretofore made."

COLLEGE PARK TRIAL OF PLASTER.

In 1864, R. C. Kedzie, of the Michigan State Agricultural College, reported on a piece of ground in the College Park that had been seeded with clover and timothy for the purpose of testing the question, as to the benefit occasioned by the application of Plaster and some other fertilizers and manures. One of the plots into which the piece of ground was sub-divided was left without any manure or other application—just in its natural condition—the previous year, when the grass seed was sown. The plot that had no application whatever was mowed twice, as was the plastered lot also, and it yielded the following amount of dried grass or hay, duly weighed as it came off the field, calculated per acre :—

First cutting	2,726 lbs.
Second cutting	1,742 "
Total	4,468 "

The piece of ground that was plastered at the rate of two bushels per acre, produced as follows :—

First cutting	3,917 lbs.
Second cutting	3,056 "
Total	6,973 "

The increase caused by the application of Plaster, therefore, was 2,015 lbs., or nearly one-third. In other words the soil without Plaster yielded 2¼ tons per acre of hay, mostly clover; and the plastered (at the rate of two bushels per acre) yielded 3½ tons per acre.

WHAT GOOD PLASTER WILL DO.

The MICHIGAN FARMER, an able agricultural paper, gives some valuable information, the result of experiments, to show what Plaster will do; and, among the experiments related are a series tried at the Michigan Agricultural College, and reported by Prof. Kedzie, to whom we are indebted for much that is exceedingly valuable and useful in practical farming. The whole series of experiments comprised several series of top-dressing, and a plot of ground on which there was no application of any fertilizing matter, and which served as an example of what the soil produced in its unaided or unfed condition. The several plots were numbered as follows, each plot containing 72 square rods :—

1. No top-dressing.
2. Plaster, at the rate of two bushels per acre.
3. Wood ashes, five bushels per acre.
4. Muck, pulverized, twenty loads per acre.
5. Muck, pulverized, twenty loads and three bushels of salt per acre.

6. Salt, three bushels per acre.
7. Horse manure, twenty loads per acre.
8. Cow manure, twenty loads per acre.

At present only the plots that had no fertilizers applied, and the plot that was dressed with plaster are dealt with.

In 1864 the dressings were applied from the 5th to the 10th of May, and the grass, which was timothy and clover, sown the year before with oats, no manure having been used on the field, yielding where nothing was used 2,856 lbs. of hay per acre, cut by a mowing machine and cured in the ordinary way in small cocks, and drawn in on the 20th and 21st days of June, and weighed on a Fairbanks scale. The plot No. 2, dressed with two bushels of plaster, yielded the same way at the rate of 3,917 lbs. per acre, or a gain of 37 per cent.

In 1865 there was no additional top-dressing with any fertilizers. Plot No. 1, which had nothing, yielded 1,867 lbs. per acre, while the plot plastered in 1864 gave a yield of hay weighing at the rate of 2,933 lbs. per acre, or a gain of 57 per cent. over the one with no plaster.

In 1866 the plots were untouched and the grass was allowed to grow. The clover had mostly disappeared and the timothy was in the ascendant. The plot that had no top dressing yielded, in the third year from the sowing, 1,388 lbs. of hay, or a little over two-thirds of a ton, while the plot alongside of it, which had in 1864 two bushels of plaster, worth about 60 cents a bushel, yielded 1,721 lbs of hay, or 23 per cent. more than the plot which was in its natural state.

Taking the three years, we find that the unplastered plot produced altogether at the rate of 8,740 pounds (about 3¼ tons) of hay per acre for the whole time, while the plastered plot gave a yield of 13,226 lbs., or 6⅔ tons per acre, or a gain over the unplastered of 4,484 pounds, being a gain of 51 per cent. per acre, or really the two hundred weight of plaster applied in 1864, at a cost of only 60 cents, had yielded a return of two tons and a quarter of hay. These are powerful reasons for sowing plaster on grass land, and for sowing it as early as possible; and it is also recommended that it be sown with a machine. When such a return as this is secured, the cost of a good machine that insures a regularity of sowing at the right time is really nominal, and as for the plaster, its price bears but a very small proportion to the value of the increased product. Indeed, it is by far the cheapest fertilizer that can be used.

FURTHER EXPERIMENTS.

Mr. F. M. Holloway, of Hillsdale, N. Y., in 1870 experimented on a field of 13 acres with different manures, leaving one acre without any fertilizers. On one acre of this field he sowed 300 lbs. of plaster, and received 26 bushels of wheat in return; and another acre without any manure yielded 10 bushels to the acre. Mr. Holloway also tried experiments on a field of corn by plastering one-half, and on the other half putting no fertilizers. From the plastered portion he husked 80 basketfuls, and from the unplastered portion only 50 baskets of corn to the acre.

PROF. C. L. INGERSOLL'S EXPERIMENT.

During the last season Prof. C. L. Ingersoll, of the State Agricultural College, experimented with plaster on corn. The following are the facts of the case.

PREPARATION ON GROUND.

Nine-tenths of an acre was selected in field No. 8. It was divided into 36 equal plots of four square rods each, or one-fourth of an acre. The ground was ploughed May 3rd, at a mean depth of 7½ inches; the plough turning a furrow averaging six inches wide. A jointer was used. The ground was rolled to press down the furrows, then harrowed three times, and rolled again. It was marked in rows four feet apart each way, making eight rows each way, or 64 hills on a plot.

PLANTING AND CULTIVATION.

The ground was planted with the Yellow Dent variety, seven grains in a hill, on May 15th. Nine plots received 2 lbs. of Plaster, distributed at the rate of one-half ounce in each hill, before planting. Thirteen more received a top-dressing of the same amount on May 31st, after the corn was up and ready to cultivate.

The corn was cultivated four times, once in a row each way, on May 31st, June 13th, June 29th, and August 4th. It was twice hoed, viz.: on May 31st, and again on June 15th. The corn was thinned on June 31st to three stalks to a hill, so that the same number of stalks were growing on a plot.

The crop was cut on Sept. 7th, and, after standing till October 9th, was husked. The corn was weighed and cribbed October 23rd, and the stalks were weighed on the afternoon of October 31st, and stacked.

THE AVERAGE RESULTS.

The average results were as follows: Corn on unplastered plots 905½ lbs., an average of 71,080 lbs. per plot. Corn on plastered

plots, 1598½ lbs.; an average of 97,648 lbs: per plot. This gives a difference of 63,306 lbs. of corn in ear on an acre as ordinarily planted, four feet apart each way.

Comparing the plots where plaster was put in the hills with those plots top-dressed, we find a difference of 672 per plot in favor of plaster in hill, or 41,044 lbs. per acre.

Comparing the unplastered plots with those having plaster in, we find an average difference of 2,133 lbs. per plot in favor of plaster, or 90,710 lbs. per acre.

Comparing unplastered plots with those top dressed, we find an average difference of 1,161 lbs. on each plot in favor of top dressing, or 49,378 lbs. on an acre.

CORNSTALKS.

The unplastered plots gave a total of 824 lbs., or an average of 37,253 lbs. per plot. This gives a difference of 2,115 lbs. on each plot average, or 89,953 lbs. per acre in favor of plaster.

Comparing plaster plots, viz.: That is those with plaster in the hill and those top-dressed, we find a difference of 873 lbs. per plot, or an average of 37,013 lbs. per acre in favor of plaster.

Comparing plastered plots with those that received plaster in the hill, we find an average difference of 2,349 lbs. per plot, or 108,421 lbs. per acre in favor of plaster.

Comparing unplastered plots with those top-dressed, we find a difference of 1,813 lbs. average on each plot, or 75,962 per acre in favor of top-dressing.

ASHES AND PLASTER.

Joseph Yerkes, a good, practical farmer of Montgomery County, Pennsylvania, rented a worn out farm of N. B. Bolteau, Esq., of 150 acres. One large field of 20 acres had become so utterly exhausted and worn out by previous tenants, during a period of fifty years, that the last crop of oats grown on a great part of the field never reached a height of more than eight or ten inches, and was hardly worth harvesting; and, indeed, many spots in the field had become so impoverished that they failed to produce either grass or weeds. The stubble was ploughed down in the spring, and the field was planted with corn, four grains in a hill, the rows being the usual distance, four feet apart. When the corn was dropped in the hill, a small handful of ashes mixed with plaster was dropped on the hill and then covered with the corn. It was cultivated four times, and the product was 50 bushels of corn to the acre. But, for the ashes and plaster, the crop of corn would not have [illegible] worth the expense of gathering, as was shown by the previous crop of corn.

CONCLUSION.

We have given in the foregoing pages a mass of testimony, collected from various Northern States, and from Canada, that cannot fail to convince the most skeptical, that Gypsum or Plaster is the cheapest and one of the most efficient fertilizers known to modern agriculturists. We have shown that it is in the highest degree beneficial to all plants—to all vegetation—but none in an equal degree to all, nor to the same crops under different circumstances. Some soils and some plants are more benefitted by its use than others. Wet, mucky land is probably but little benefitted by plaster. Draining would do it more good. We advise farmers to read carefully all the testimony we have presented before them, and compare it with the result of their own experience; and, from the whole they cannot fail to draw a sound conclusion as to the effect of Plaster upon growing crops.

DIRECTIONS FOR THE USE OF PLASTER OF PARIS OR GYPSUM.

In all cases where it can be done, the application should be made in still weather, when the leaves are damp with due and fog, or from recent rain, so as to cause the dust to adhere to the plant.

As a general rule, the best results will be attained by the application of Plaster directly to the leaves and stems of the plant, as the rains will wash enough of it down to the roots. Still, sowing with the seed will pay largely.

RED CLOVER AND GRASSES.

Plaster should be applied after seeding, as soon as the frost leaves the ground in the spring—about 200 lbs. to the acre. Some sow more, and some sow less to suit, but generally that quantity is sufficient.

In all other cases, where the clover or grass has a year or more growth, it is best to sow in the spring when the plant is three or four inches high, as its application to the leaves and stems is highly beneficial, and the rain will wash a sufficient portion of it down to the roots. It should be applied when the plant first starts, and again as above directed; 100 lbs. each time. After the first crop has been gathered, great results follow from a second application of say 50 lbs. to the acre for the second crop. Both seed and hay will be much improved in quality and quantity.

CORN.

The common method of applying Plaster to corn is to sow it upon the hill as soon as the plant is up three or four inches—about a teaspoonful or a little more to each hill. Another dressing should be given after hoeing or cultivating, and the plant has

attained seven or eight inches in height. A little unleached ashes combined with the plaster produces the best results.

POTATOES.

Plaster is of immense advantage to potatoes. It should be sown upon the hill soon after the plants are up—same quantity to the hill as in corn—scattering the plaster as much as possible upon the leaves. After hoeing, another liberal dressing should be applied. Plaster is repugnant to all insects, and, when mixed with Paris Green, destroys the potato bug, and nourishes and invigorates the plant.

WHEAT.

There should be a top-dressing of plaster upon winter wheat in the fall, when the grain comes up, of about 100 lbs. per acre, and another similar dressing in the spring, after the wheat has started. If the land has been badly winter-killed, or of uneven growth, a larger application should be made, at least 100 lbs. to the acre, making a still more liberal allowance to the poorest spots. The effect is sometimes marvellous. Upon spring wheat it should be sown after it is well up, about 200 lbs. to the acre.

OATS, BARLEY AND RYE.

The application of Plaster to oats, barley and rye, should be the same as upon spring wheat. Some farmers, after ploughing, have sown a good coating of Plaster upon the ground before harrowing, and harrowed it in with their oats; then sowing clover, and claim that they have thus produced splendid crops.

TURNIPS, BEETS AND OTHER ROOT CROPS.

For root crops, 200 lbs. of Plaster should be sown to the acre, immediately after ploughing and before harrowing, and when the plants have well started in their growth, a good top-dressing should be applied. The return will be a handsome reward.

FRUIT TREES AND FRUIT.

Gypsum should be sown upon fruit trees, and upon small fruits when in blossom. Extraordinary results have been claimed by such use of this grand fertilizer. The sprinkling should, of course, be done, as in other cases, when the leaves and blossoms are moist or wet. Fruit growers in the State of New York use Plaster regularly upon their fruit trees. It not only greatly improves the fruit, but has a strong tendency to check the ravages of insects, and especially is this the case with apples.

One example, out of a great number at hand, is sufficient for illustration. Henry Gilbert, Esq., of Michigan, stated that he had a peach tree and a sweet apple tree in his yard, both of which

were annually full of blossoms for several years, but bore no fruit. One day, returning from plastering his corn with a pail half full of Plaster, he threw it upon the trees, then in full blossom, and the result was a full crop of fruit on both trees; and a repetition of the experiment each year never failed to bring a good yield of both peaches and apples of excellent quality.

GARDEN VEGETABLES AND PLANTS.

All garden vegetables, plants and flowers are greatly improved by frequent application of Plaster; and, what is equally important, insects are repelled. It will keep cucumber vines entirely free from striped bug. The application should be light but frequent, and always after showers, or when a heavy due is on the plant. We would simply add that Gypsum acts as a disinfectant by absorbing unwholesome gases, destroys bad smells about barnyards, stables, out-houses, slop drains, and cess-pools; and contributes greatly to animal health and comfort, purifying the air as it necessarily must by the absorption of impure and offensive exhalations.

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