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THE FARMER'S ADVOCATE & HOME MAGAZINE

WILLIAM WELD, EDITOR AND PROPRIETOR.

THE LEADING AGRICULTURAL JOURNAL PUBLISHED IN THE DOMINION.

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Our Monthly Prize Essays.

CONDITIONS OF COMPETITION.

- 1.—No award will be made unless one essay at least comes up to the standard for publication.
- 2.—It is not necessary for essayists to agree with our policy, so long as they give sound reasons for differing from us.
- 3.—The essays will be judged by the ideas, arguments, conciseness and conformity with the subject, and not by the grammar, punctuation or spelling, our object being to encourage farmers who have enjoyed few educational advantages.
- 4.—Should one or more essays, in addition to the one receiving the first prize, present a different view of the question, a second prize will be awarded, the sum being decided by ourselves in each case, and the essay will appear in the same or in a succeeding issue.

Our prize of \$5.00, given for the best original essay on the following subject: *Is our Future Husbandry to be Special or Mixed?* has been awarded to Frank Howell, St. George, Ont. The essay appears in this issue.

A prize of \$5.00 will be given for the best original essay on: *Personal Observations on the Effects of the Removal of our Forests.* Essays to be sent in not later than January 15.

A prize of \$5.00 will be given for the best original essay on: *Improving the Soil by Green Manuring.* Essays to be sent in not later than February 15.

Notice.

All letters respecting the business of the **ADVOCATE** should be addressed "FARMER'S ADVOCATE," and not to any private person. If intended for W. Weld personally, write the word "personal" or "private" above the address.

Editorial.

The Uses and Abuses of Land Plaster.

An inquirer in our correspondence columns, who owns an extensive gypsum quarry, asks us, amongst other questions, our opinion as to the value of this article as a fertilizer. As farmers in many sections of the country use more or less plaster on their land, we give the subject special prominence, and hope this article will be read with special attention by all our readers.

There is a general impression that any application to the land is beneficial which produces an increased yield in the crop. This sounds like common sense, but upon closer investigation, people's ideas have become greatly modified. A useful distinction is now drawn between fertilizers proper which act directly as plant food, and applications which act indirectly by making the food already in the soil more available for the plant; the former tend to increase the fertility of the soil, while the latter are conducive to soil exhaustion. These distinctions make the question one of great practical value. However, a sharp distinction cannot always be made; for an application which acts directly on one class of soil or crop may act indirectly on another, and on some soils or crops the effects may be both direct and indirect. The most common applications classified as indirect are salt and gypsum.

Plaster or gypsum is a sulphate of lime, that is to say, it is composed of lime in chemical combination with sulphuric acid. No crop can grow without lime and sulphuric acid, but repeated experiments have proved that the small percentage of these constituents required for the plant is sufficiently abundant in most all soils, the substances usually lacking being nitrogen, phosphoric acid and potash, so that fertilizers are only valued for the quantity of these ingredients which they contain. Gypsum therefore contains no constituent which has any commercial value in the fertilizers sold in our markets. Apart from these considerations, however, lime and gypsum have special functions which make them valuable if applied judiciously. It should also be borne in mind that some soils are constitutionally deficient in lime, in which case both lime and plaster act as a direct plant food.

It has been found in practice that plaster almost invariably increases the yield of leguminous plants, such as clover, lucerne, beans, and peas. In beans and peas, however, the tendency is towards an increase of the straw and leaves at expense of the seed, but this objection is not so much observed in the case of clover. There

are two reasons why plaster benefits clover:

(1) This plant contains a large percentage of sulphur, which it obtains from the sulphuric acid in the gypsum; (2) by a process of chemical decomposition in the soil, some of the acid becomes unlocked and carries potash down to the deep roots of the clover, and as clover feeds very greedily on potash, this action produces marvellous results on soils rich in potash. Gypsum therefore often produces effects superior to those of a potash fertilizer. That these effects are not produced by the lime is known by the fact that sulphate of magnesia produces the same results as sulphate of lime. From these facts it will be seen that gypsum possesses an agricultural value far beyond its market price, and in utilizing it on clover, the beneficial effects will be seen in the succeeding crops of the rotation. A clover crop prepared in this way makes a better preparation for wheat than the best conducted summer fallow, chiefly for the reason that the immense roots of clover produced by the gypsum, contain a large percentage of nitrogen—an element which is the special food for wheat and all other cereal crops.

These are considerations which largely detract from the best effects being obtained from gypsum. The best results can only be obtained in a moist climate, or in a season that is neither too wet nor too dry. It is uncertain for root crops—roots require phosphate foods—but if applied to roots, it will benefit a succeeding clover crop. Its effects are uncertain on grass. It is useless on a worn out soil, on a cold, wet, stiff clay, on dry sand, or on land which has a damp, springy subsoil. Favorable effects are usually obtained on a deep humus and on a warm loam.

Gypsum should be ground as fine as possible, and can be sown alone or with wood ashes. The best time to sow is in the spring when the weather begins to get warm, or when the clover begins to grow, and if the weather is then damp, so much the better. There is a very wide latitude in the quantities to be applied. Try various quantities, based on the observations we have made, from 150 to 250 lbs. per acre.

There is nothing better in the stables than a plentiful supply of gypsum, especially where the stock is highly fed, thereby producing rich manure. Such manure readily gives off large quantities of nitrogen in the form of ammonia, which has a strong suffocating odor. This is not only a waste of the most expensive fertilizer, but acts deleteriously to the health of the animals and their attendants. Gypsum absorbs and retains ammonia (properly called carbonate of ammonia.) It should be spread in the gutters after the stable is cleaned out, and also over the droppings, which prevents the rapid development of the ammonia,