How Plaster Acts.

Wallace Orcutt, Savona, N Y, writes: "One year ago last fall I rented out a piece of ground for one crop for money rent, and the man sowed winter wheat, the ground being gravelly, or more properly stony Toward spring I concluded to seed it with clover and timothy, and thought it would need some plaster. I told my tenant I would pay for the plaster if he would sow it; but to my surprise, he replied that he did not think it would pay him to spend the time to sow it just for the benefit it would be to the wheat, as he was not interested in the seeding Since that time I have conversed with several farmers upon this subject, some claiming that plaster does not benefit winter wheat Now in our locality the soil is naturally dry and stony, and consequently we are not likely to get a large growth of straw. What I wish to know is, does gypsum benefit winter wheat, if sown in the spring, or if it does benefit it, can it injure it in any way by rusting the straw, or anything of that kind? Another point in regard to gypsum that I would like to see "aired" is, does plaster exhaust the soil in any way? I know one man who has paid for a farm and raised a family—and therefore must be quite a successful farmer—who firmly believes that plaster will eventually exhaust the soil if applied every year in succession If plaster merely retains the escaping ammonia, as we believe it does, or if it imparts any fertilizing properties, I don't see how this can be the case"

Plaster acts in the most conspicuous manner upon clover and other broad-leaved plants. Its manner of action, chemically considered, is a disputed point. It is sufficient, however, for us to know that it has a special value upon certain crops and soils. Wheat is not one of these crops, and yet in some cases this crop has been benefited by an application of plaster, probably because the soil was deficient in lime, in which case common lime would have answered the same purpose Plaster, however, would never injure a crop of wheat, because if the soil or crop did not require its help the plaster would simply remain inert, as so much sand or other unnecessary matter might do. As to the exhaustive properties of plaster, the facts are that any special fertilizer, such as this, is only a stimulant, and helps the crop to appropriate more nutriment, and grow with greater vigor in consequence. In exactly the same way, a person might take exercise as a means of invigorating his physical condition. The consequence would be that his appetite would be increased or stimulated and his digestion invigorated. But if the new demand of his system were not met by an increased supply of food, he would soon become exhausted by the extra exertion and his health would fail. If obliged to persist in the labor he would simply use up the substance of his muscles and grow thin and lose weight, until, finally, he would die. Exactly in the same manner as in this homely illustration all special fertilizers act; guano, lime, plaster, potash or wood ashes, salt or equivalent substances all finally produce this exhaustion if the soil is not reimbursed for its extra production. "Out of nothing, nothing comes;" and if 100 pounds of plaster produce half a ton of clover extra, the soil has been made to yield up potash, soda, phosphoric acid, magnesia, chlorine, with carbon and nitrogen, in addition to probably lime and sulphuric acid, in excess of that contained in the plaster. The vigor of the plant derived from the stimulus applied has enabled it to draw this excess; and this excess must be returned It is seen, therefore, that the use of plaster is only a temporary expedient, and if it is to be applied every year to the same land there will be needed some other fertilizer added to it. The legitimate use of plaster is in increasing the clover crop or other crops which should be fed upon the farm and returned to the soil, or which should, in large measure, be ploughed into the soil. If a crop of clover is plastered and turned under as a fertilizer a permanent benefit accrues, because a large addition of carbon and nitrogen which are derived in some way or other from the atmosphere is made to the soil, and, besides, the decomposition of the clover dissolves or sets free from the soil some of its mineral constituents, and in this way a green manuring adds actually more to the soil than it itself contains. In this way the ultimate and greatest value of plaster is made available.—*N. Y. Times.*

Deep Ploughing.

We are fast approaching a unanimity of opinion that the old system of scratch ploughing—inverting the soil to a depth of three or four inches—ruins the land and the land-owner. "Daddy done it," it is true, but Daddy did very wrong. He could afford it, however, better than we can. It was criminally wasteful of the gifts of a bounteous Providence, but when he had utterly exhausted the surface of a piece of land, he could afford to move away to a new ground and repeat the process. Hence the bald red hills, seamed with gullies, and hardly capable of sustaining the stunted pine saplings with which they are sparsely covered Daddy's children and successors cannot indulge in this extravagance. We must stay where we are. We have no new grounds to skin. The red hills are our sole inheritance, and unless we can reclaim them—bring them back by kind treatment to the state of fertility in which our ancestors found them—we must continue to be as poor as we are now It is demonstrated that we can do this. Daddy has only exhausted a few inches of the surface of our land. He has left a deeper soil than that he wore out, which we can make productive if we will only open it and let in the light and heat. This is done by ploughing. But those who believe in deep ploughing often make the mistake that deep ploughing means inverting the soil to a depth of eight or ten inches by a great turn-plough, carrying the surface mold down to that depth, burying it out of reach of plants, and bringing up in its place the hitherto unused subsoil which has not yet been made productive by the fertilizing influences of the air. The growing season is not long enough to fertilize this newly exposed soil, or allow the crop to reach that which has been turned under, and the result is that the convert to deep ploughing believes that he has "killed" his land and has made a fatal blunder by following the advice of those "blamed book farmers." If he would have the patience to wait until the newly turned soil, by exposure to light, heat and air, had become fertile and mixed with the inverted subsoil, he would find the entire soil fertile to the depth he had originally ploughed, and that he was fully protected against all danger from drought. But the use of the subsoil plough obtains immediately all the advantages of this deep *turn* ploughing, and that with less expenditure of power Plough the surface soil to a depth of six inches, and following with a subsoiler break the subsoil to an equal depth, and all the good to be derived from deep turn ploughing after years of patience is had at once. Whatever manure is applied is thus turned under sufficiently to prevent the loss of its fluids and escape of its ammonia; while surrounded by loose, moist, aerated earth, it is acted on by heat, air and moisture to insure speedy decomposition and make it immediately available for the nutriment of crops. Were manure and subsoiling both an attainable combination, and were the farmer obliged to dispense with one or the other, we should unhesitatingly take the subsoiler and let the manure go.

We must, however, carefully remember that deep ploughing is not necessarily deep *turning*, but deep *breaking*. If we remember this, we will never complain of land being killed, nor denounce the book farmer.—*Cor. Philips' Southern Farmer.*

Permanent Pasture v. Arable Lands.

A correspondent of the *North British Agriculturist*, sends the following sensible remarks in a communication to that journal:—The high price of butcher meat, and the great cost of labor, have led to a great deal being said and written lately about the conversion of arable lands into permanent pasture. Now, I have great doubts about this system of turning arable lands into pasture continuing to be profitable to the farmer, even supposing butcher meat kept at its present high price. If the system is to continue, it is my opinion we will have to go back to the olden times, when all the meat for winter use was killed and salted in the autumn. For by increasing our acreage of pasture, our acreage under white and green crop must be reduced to the same extent. We may be able to keep a greater number of stock on our pastures through the summer, but in winter (and it is in the cold winter months the largest amount of butcher meat is consumed) we find we cannot feed as many cattle under the new system as we could under the old, when we had less pasture and more turnips and straw.

Any one who has noted the prices of stock in our markets for the last two or three years will have observed that this unnatural state of things is already beginning to be felt. In fact, the cattle trade has lost its balance. With a large acreage of pasture in the country, there is a great demand for grazing stock in the spring, and a consequent rise of prices. Then in autumn, when the grass fails, and there is a large stock to winter on a reduced quantity of food, the prices naturally fall. Under this increase of pasture we may have succeeded in raising a larger stock, but taking into consideration the enormous number of half-fat animals that are slaughtered sometimes in autumn, I don't think we have succeeded in manufacturing more beef or mutton.

The plan I would suggest to improve this state of matters would be to keep a greater number of cattle in courts through the summer and feed them on cut grass. No doubt this plan will meet with great objection in consequence of the amount of extra labor it entails, but taking into consideration the greater number of cattle a given acreage of grass will feed when it is cut in comparison to the same acreage under pasture, and also the amount of land it will set free for the growth of corn and turnips, I am certain farmers would find themselves better repaid by being able to produce more meat at the proper season than by letting their land lie in a half-idle state of permanent pasture.

Smut in Grain.

Corn smut is caused by a parasitic fungus long known to botanists by the name of *Ustilago Maidis*, and it has frequently been described and figured in botanical works. Its development or growth is also pretty well understood The fungus grows from very minute spores, which are produced by millions, but exactly as to how these spores react and infest the growing corn, I can find nowhere any definite information, nor have I seen any data relative to preventives. We are left here to surmise and analogies. Smut in wheat is produced by a similar fungus, similar in its botanical characters, in its results, and this wheat-smut fungus is much better known. It is proved that this gains access to the plant through the seed The spores are sticky and adhere to the sound grain at harvest or thrashing, and are sown with the seed wheat. As the new wheat-plant grows, the fungus developes in due time with it, ripening its spores at harvest. The spores may be killed and the crop saved by soaking the seed wheat in strong brine, or in a week solution of sulphate of copper, commonly known as blue vitriol or blue stone. (The proportions used are two to five ounces of the crystals per bushel of wheat) it would be well to try the same remedies with corn. I have seen this recommended, but I have no information whatever as to the results Corn-smut is rarely abundant enough to seriously affect the crop, and is principally dreaded because it is poisonous to cattle.—*Prof. Brewer.*

How Sod Manures.

Geo. Geddes says in the *N. Y. Tribune* Prof. Kedzie, one of the most careful experimenters among scientific men, Prof. of Chemistry at the Michigan Agricultural College, "took a square foot of which there are 43,560 in an acre) of June grass turf, and washed away all the soil in running water; and then weighed the grass roots and surface grass, or the amount of green manurial matter usually contained in a heavy greensward, and found it to be five pounds to the square foot, or at the rate of more than one hundred tons to the acre." The Professor, in his letter to me, from which the foregoing has been extracted, further remarks that "this is doubtless in excess of ordinary greensward, as it was a very heavy mat of June grass"—but he says he "thinks that few farmers estimate correctly the amount of vegetable matter they add to their soil by ploughing under heavy greensward." One hundred tons to the acre of clean grass and roots from the turf of an old pasture or lawn, is a very valuable manuring, when we consider how evenly it is spread and accurately it is applied. But the roots of June grass run but a little way into the ground compared with the roots of red clover, that penetrate from two to four feet, and bring to the surface the fertility that lies deep in the soil. When a clover sod, that after being mown, has been allowed to stand a few weeks, and the new stalks are grown to be perhaps eight or ten inches high, there will be about all that can be ploughed into a furrow.

Dried Potatoes.—The *Rochester (N. Y.) Express* says: "Lately a trade has been developed among some Rochester shippers about which but little is known. It is the trade in dried potatoes. Potatoes are sliced up and dried in much the same manner as dried apples. One firm in this city has an order on hand now for 50,000 pounds of these dried potatoes, as well as for 1,500 bushels of onions, which are dried in much the same manner. They are intended for the navy. A bushel of potatoes dries away to about ten pounds, and a bushel of onions to about six pounds. When ready, they are put into large tin cans, holding about forty pounds each, and sealed up the same as oysters."