Mechanics and General Science.

THE EXHAUSTING EFFECTS OF GYPSUM.

the May number of the Agriculturist, the true by Sprengel, of the ash of the clover, will alford cause of the failure of gypsum to improve the the required information: ·lover crop, after it has been used for a number. of years, has not, I think, been assigned; although some approach to it has been made in the passage "Or plaster may have a valuable effect, &c. &c. as a manure."

It would be a matter of just surprise that this agent should operate favourably for a term of years and then cease to have any beneficial effect, if it were the only mineral substance which the plant needed for its use. But as this is not the case, we ought not to wonder, when we consider the matter deeply, that after a time its application should no longer be of any advantage. Even without plaster, clover cannot be grown for a by no means the only mineral matter required by number of years at short intervals. In England, clover. Many other substances are essential to its it has been found that when the Norfolk four growth some in large quantities, as potash; others in years' course has been followed for a long con- less; but all are indispensable. Unless the clover inuance, the red clover will scarcely grow; the crop be artificially supplied with these mineral land becomes, as it is termed, clover sick. With substances, or meet with them in the soil in suffiland becomes, as it is termed, clover sick. With the failure of the clover, the corn-crop that follows it is much deteriorated. Why is this? It is, in the first place, because the land has been ex-hausted of those substances which are essential to the growth of the clover : they have been car-ried off by the preceding crops faster than the decomposition of the mineral fragments in the soil has supplied them ; and they have not been res-tored in sufficient abundance, if at all, by manure. Secondly, although clover is a tap-rooted plant, it does not thrive very well in too light a soil. Now does not thrive very well in too light a soil. Now produced without it. Consequently double the the effect of repeated tillage is to render the quantities of potash, and of the other mineral matstiffest soil lighter; the decaying roots of all culti- ters indicated in the above analysis, are abstracted vated crops, especially those of the plant in gues- from the soil, which will be exhausted and betion, aiding to produce this change. So that at cc: ae clover-sick in a period probably about one-last the soil, if not originally very stiff, becomes third shorter than it would have been, had plaster too light and porous for the clover and also for the not been used. Were it not that the decomfollowing grain crop. Over soil in this state the position of the mineral rocky fragments in the frosts of winter have great power, and the young soil is constantly going on, the land would be clover is consequently in much danger of being exhausted in half the time; but as this process is thrown out and winter-killed : if the succeeding in continual operation, there are constantly crop be wheat, it also will suffer from the same fresh supplies furnished, although not in sufficient cause. I shall merely make brief reference to a third reason which has been assigned, without laying much stress upon it, as it involves a still article in the Dollar newspaper, after plastering disputed question. The rocts of plants possess had been discontinued for five years, became the power of excreting some of the substances capable of again bearing good crops. Had he held in solution by the descending sap. The applied unleached wood ashes with the plaster, matter thus rejected is both organic and inorganic. he need not have given his land five years rest. These excretions, when they have accumulated Again, if I am right in thinking that the presence in the soil, have been thought to be injurious to of the decaying roots tends to render the soil the plants which part with them, to such a degree lighter and more porous, and therefore less suited as to render a change of crop necessary: but, al- for clover and for wheat, if that is to be the suc-though huntful to the plants that produce them, ceeding crop, it is perfectly evident that when they have been considered as affording nutritious the crop is very much increased, as by the applimatter to plants of other families. There is every cation of plaster, this effect must also be very reason to believe that plants do give out matter much greater than it otherwise would have been. by their roots; but whether it is injurious to the Hence means calculated to consolidate and stiffen excreting plants, and whether it is beneficial to the soil must be adopted; and of these the use of other kinds of plants, are questions as yet not fully a heavy roller is perhaps the most serviceable determined.

We will now proceed to ascertain what substances clover takes from the soil, as without this preliminary step it would be impossible to arrive at any satisfactory conclusion respecting the ac-In the article headed "Plaster or Gypsum," in tion of plaster upon it. The following analysis,

Potash		•	•							26.70
Soda .	•				•					7.07
Lime		•		•	•				•	37.09
Magnes	ia	•	•	•	•			•		4.45
Oxide o	f i	ron,	al	umi	ina	, &	c.			0.20
Phospho	ri	c aci	d		•	•			•	8.80
Sulphur	ic	acid		•						5.98
Chlorin	e	•	•	•						4.86
Silica	•	•	•	•	•	•	•	•	•	4.85
										100.00

7.48

Per cent. of ash in dry state .

It will be seen from this analysis that plaster is abundance for the demands of the plants. This is one reason why the land of the writer of the and of the most general application. If the theory