other hand, which are grown under somewhat abnormal conditions, and which store up a large amount of succulent products of a comparatively low degree of elaboration, are probably partly dependent on the carbon compounds, yielded by the soil. The leguminous crops, again, though coming generally more within the former than the latter category, still seem to be dependent, for luxuriant growth, more or less upon a supply within the soil of complex organic compounds.

It would appear, however, that whatever may be the precise result to which investigation may lead, in regard to the questions here involved: it may, at any rate, be pretty safely affirmed, that we shall not arrive at the true explanation of the phenomena upon which depend some of the most striking advantages of a rotation of crops, until we are better able than at present, to define the relations of the different crops to the different sources of *carbon* and of *nitrogen*.

The practical conclusions from this interesting enquiry may be very briefly stated:—

When land is not what is called "clover sick," the crop of clover may frequently be increased by top-dressings of manure containing potash, and suerphosphate of lime: but the high price of potash, and the uncertainty of the action of manures upon the crop, render the application of artifical manures for clover a practice of doubtful economy.

When the land is what is called "clover sick," none of the ordinary manures, whether artificial or natural, can be relied upon to secure a crop.

So far as our present knowledge goes, the only means of insuring a good crop of red clover is to allow some years to elapse before repeating the crop upon the same land.

Specific Gravity of Roots.

It is well known to farmers that turnips, beets, &c., differ considerably in their feeding properties, arising from the different varieties cultivated, the character of the soil, manures, climate, &c. Some very important experiments were made by Professor Sullivan, upon the varying specific gravity of our cultivated roots, the results of which were published in the *Dublin Agricultural Review*, a year or two since. He observes:—

"One of the most striking differences in quality, which roots exhibit, is that of relative amount of solid matter,—a difference which may be determined by ascertaining their specific gravity; the roots containing the least water being densest. I therefore determined to try whether the property of density could be propagated For this purpose I selected three roots of white Silesian beet of nearly the same size, (2lbs, 6oz to 2lbs, 7oz,) but exhibiting as great a difference in specific gravity as possible."

The roots whose specific gravities were thus determined, were planted, and allowed to produce seed, which was sown, and the roots produced from them examined. The following table gives the weight of roots grown from parent seed, and per centage of solid matter:—

Specific gravity of parent root 1,070....1,050....1,030.

Weight of roots.		Per centage of solid matter.		
14 to 20 oz.....	Max...	18.83....	15.91....	10.11.
	Min...	17.46....	14.52....	9.12.
32 to 40 oz	Max...	17.74....	15.35....	10.56.
	Min...	15.65....	13,65....	9.20.
48 to 60 oz....	Max...	16.15....	15.47....	8.75.
	Min...	14.80....	13.89....	7.87.

The professor reasons cautiously, as a chemist ever should, upon these results; but we heartily concur with him in deeming them worthy of extended repetition. That like produces like is a well known agricultural axiom; and we opine with the professor, that if we can by a judicious selection of roots for seed increase the density of the produce, we may also succeed in developing some particular constituent of more importance than the other. We shall watch the progress of discovery and improvement in these directions, with particular interest.

Harvest Prospects.

The accounts of the state of the grain crop in Canada are, perhaps, more than ordinarily conflicting at the present time. The late spring frosts in some localities, seriously injured the wheat plant, while in others the drought has been very severe on the spring crops. In some sections the reports of the crops generally, including hay, are pretty satisfactory, and in others highly encouraging. The midge, we are sorry to find, is doing its destructive work in some places, but not, we hope, to an alarming