tradictory to practical farming. If this result is, in fact, of no applicability in practice, it merely proves that the development of plants should not be made dependent on the supply of the necessary substances, but that, on the contrary, an abundance of the necessary substances should at once be offered to the plants, in order to enable them to regulate themselves their supply, according to their state of development; a conclusion which relates most particularly to the plants we cultivate, inasmuch as they have to reach maturity within a certain period of time, or will fail entirely to do so. The spirit of Liebig's mineral theory, against which this objection has been repeatedly raised, makes in no wise the fertility of a soil dependent on its mineral constituents exclusively, nor does it attribute to them any preponderance over ammonia in regard to their importance as nutriments; it only demands the acknowledgment of their equal significance as matters indispensable to vegetable life; and as the mineral constituents can only be supplied by the soil itself, whilst the sources for ammonia are various; it recommends such a system of manuring as is in best accordance with these facts. If we apply ammonia to the one of the soils above referred to, and soluble mineral salts to the other, we restore an equilibrium of the nourishing substances in both soils, and by so doing render them productive in the very spirit of the mineral theory. But we also know that the same result can be effected by putting both soils in the fallow until the one has appropriated to itself the required quantity of ammonia from the atmosphere, the other that of soluble mineral salts, as produced by the steadily advancing degradation of its mineral constituents. A soil which has become deficient in ammonia may, therefore, once regain its fertility without any artificial application being made to it; as can also a soil which is deficient in soluble mineral salts, but contains such constituents as will produce them by their degradation; whilst a soil which has no mineral constituents whatever, will remain unproductive until it is artificially supplied with them by manure.

In practice, where we cannot wait until the soil has recovered its nourishing ingredients by its own exertions, we have to apply both ammoniacal and mineral manures to restore its fertility; and if we choose to apply only the latter, with the expectation that the ammonia required would be furnished by the atmosphere, we would be acting just in the same way as if we had added ammoniacal salts alone to a soil deficient in soluble mineral salts, with the expectation that they would be furnished in time by the process of degradation. In neither case will our expectations be realized in practice, nor are they in compliance with the spirit of the minera theory.

Lawes' and Gilbert's observations illustrate most remarkably