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The Germination of Seeds.

The season is now close at hand when the land has to be prepared for the reception of seed of the various descriptions of spring crops. Every farmer or gardener is aware how much depends on bringing the soil into a propitious condition by ploughing, digging, harrowing, &c., processes which, if neglected, or imperfectly performed, will be sure to affect the bulk and quality of the crop. A certain depth of friable and finely-reduced earth, readily admitting air, warmth, and moisture, is as necessary to the growth and development of the cultivated crops as are the various ingredients of an organic and vegetable nature that constitute plant-food, and which, if it does not already exist in the soil, must be supplied artificially in the shape of manure. It is well known under the name of manure. We present we propose to consider the earliest stage of development in the life of a plant and the conditions or agents which affect it, usually designated *germination*. A cursory view of this interesting subject will afford the practical man some useful suggestions, as well as pleasing evidence of the wisdom and goodness of Creator and power.

The growth of the seed consists in the development of the germ into a perfect plant, and is designated *germination*. Supposing the conditions of growth to be favourable, the first preliminary is a softening of the coat of the seed, which means water gains an entrance, and pervades the mass, causes it to swell. When the water reaches the germ of

the seed, the gluten or albuminous matter near to it undergoes a chemical change, and we have a very important and powerful body formed which is called *diastase*. Whether or not the germ in any way participates in this change, we have no proof; but, if not, it is certain that at least by its presence it exerts a controlling power. The same addition of moisture to any other portion of the seed would not produce the same effect, for this agent (*diastase*) is only found in close proximity to the germ, and its existence in the seed appears to be simultaneous with the first stage of germination. Upon the *diastase* thus formed devolves the important office of preparing food for the growth of the germ; for the bulk of the seed, although abundant in quantity, and exactly suitable to its constituent elements, is not ready for use until it has become soluble in water, and thus been made capable of entering into the circulation of the germ. This is accomplished by means the *diastase*, by the agency of which the necessary supplies are prepared, so long as the store of food in the seed is needed. An immediate extension of the cellular matter accompanies the entrance of the food into the circulation, and we have the external evidence of life by the sprouting of the seed. In whatever position the seed may be placed, the radicles at once strike perpendicularly down into the soil, and the tender rootlets fix themselves there with but little delay. As soon as this is effected, the gemmule grows in the opposite direction, and becomes developed into the stem and leaves of the plant.