ment when growth is resumed. It is stated or suggested by some botanists of repute that this so-called non-maturity of the embryo in sound and apparently ripe seeds is the cause of delayed germination of most seeds that seem to require a rest period. Some recent work by Crocker, however, would seem to disprove this theory with many, but not all, kinds of seeds. The hawthorn, for instance, will germinate very sparingly during the first two years, even though ideal conditions for growth be provided, by artificial or other means.

(b). Water content. The ideal condition for preserving life and vital energy within the embryo of most seeds is storage in a relatively cool, dry place. Even under the best conditions of storage, seeds gradually part with their moisture content. The rapidity with which this takes place is believed to be due largely to the condition of the seed coat. If the seed coat be such as to hermetically seal the embryo with its food supply, then life is preserved, under proper conditions of storage, for a longer period.

Germination of the seed or resumption of growth on the part of the embryo can not take place unless the embryo is able to secure a sufficient supply of water, even though the embryo may be fully matured and ready to commence growth. Crocker found that in most kinds of seeds, such as are to be found among the cruciferæ, borraginaceæ, the plantains, the iris, and many species of water plants, that the embryo and its store of food was so completely sealed in a seed coat, impervious to water, that germination could not take place. He conducted extensive experiments with seeds of various kinds of plants by germinating them at different temperatures, with some of which seeds he artificially striated, or clipped the seed-coat, in a way not to injure the embryo, and compared the germination with seeds of the same kind on which the seed coat remained intact. With very few exceptions he found that the artificial clipping of freshly-ripened seeds (by which process of clipping he enabled the water to reach the embryo) induced prompt growth, whereas those with seed coats not clipped failed to germinate or germinated very sparingly; further, that the various kinds of seeds differ in respect to the temperature best suited to the re-resumption of rapid growth on the part of the embryo. It was found that with some of the seeds that were not entirely impervious to water but in which inbibition took place slowly, that the embryo swelled and filled the cavity occupied by it, and yet growth did not commence. As soon, however, as the "plug", or that small portion of the seed coat of some species of seeds (iris) which is contiguous to the embryo, was removed, artificial growth at once commenced. Crocker's work entirely