5. POINTS OF AGRONOMIC INTEREST IN THE PHYSIOLOGY OF GERMINATION

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In discussing the topic assigned to me in this symposium it is probably best to do it under three headings, viz., (a) rest period in seeds, (b) disinfectants and stimulants for seeds, and (c) curing and storage of seeds.

REST PERIOD IN SEEDS

GENERAL APPEARANCE OF A REST PERIOD IN SEEDS

It is an almost universal feature of seeds that at some stage of their development they go into a rest period. Sometimes this rest occurs when the embryo is in a rudimentary condition or consists of a group of undifferentiated or only partly differentiated cells. This is the case in some or all of the species of Ilex, Eranthus, Ginkgo, and several other genera. In most cases the rest occurs when the embryo is fully differentiated into root, stems, and leaves. This is true of most seeds.

Often the rest is only transient and is easily overcome by the application of ordinary germinative conditions—moisture, proper temperature, and oxygen supply. In some cases the rest period ceases as soon as the seeds fall from the plant. In fact, in spring-seeding maples, poplars, willows, and many tropical plants, the seeds must germinate very soon after falling or they will be killed by drying. For the soft silver maple Jones (17) has shown that the seeds bear about 60% moisture when they fall and are killed if the water is reduced to 33% before germination. He kept some of these seeds at subminimal temperatures fully imbibed for one year without loss of vitality or vigor, showing that death is due to water loss and not to age as such.

In other seeds a few weeks of drying in the atmosphere is sufficient to end the rest period. This is true in the grains which are of greatest interest to agronomists.

In still other seeds a long period of rest is the rule. This more often manifests itself by a few seeds of a crop germinating each year over a long period of years—in some cases 40, 50, or more years. This time-distributed germination or persistent rest is rather general in

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1Paper read as a part of the symposium on "Plant Physiology and Agronomic Science" at the meeting of the Society held in Washington, D. C., November 11, 1924.
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3Reference by number is to "Literature Cited," p. 704.