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EMBRYOLOGICAL ASPECTS OF HYBRID VIGOR IN PINES¹

By Professor JOHN T. BUCHHOLZ

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THE hybrids between some species of pine afford excellent examples of hybrid vigor in the F_1 generation of the cross. During recent years, demonstrations of this hybrid vigor in pines have been made in the nursery of the Institute of Forest Genetics at Placerville, California. The hybrids concerned are not the result of crosses between inbred strains of a species but are the hybrids between species and between varieties. Hybrid vigor has been observed in F_1 plants from the crosses: *Pinus monticola* × *P. strobus*; *P. jeffreyi* × (*P. jeffreyi* × *P. coulteri*) the latter a natural hybrid; *P. murryana* × *P. banksiana*;

¹ Contribution in lieu of his address as Vice-president and Chairman of Section G (Botanical Sciences) for 1942, American Association for the Advancement of Science.

between certain geographic varieties or races of *P. ponderosa* and in other combinations. In seedling stages, some hybrids have exceeded the growth of the parent species by an amount that appears to be much greater than that of maize. Righter² has given a few performance records over a 3-4 year period of some of these hybrids, which have greatly exceeded the wind-pollinated parents.

The possible manifestation of hybrid vigor during development of the embryo became a subject of special interest to the writer, while he was visiting investigator at the Institute of Forest Genetics, for several months during the summers of 1942 and 1944.

² F. I. Righter, *Jour. Forestry*, 43: 131-137, 1945.

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