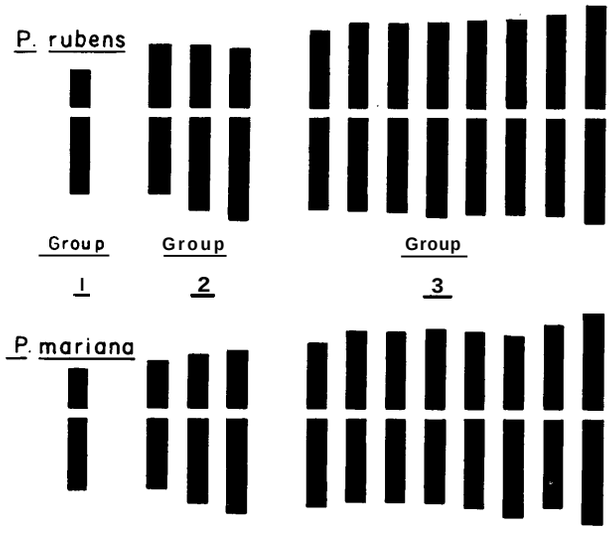

Figure 1. — Idiograms of Picea rubens and Picea *mariana* (ca. × 2500). — Groups are described in the text.

smallest pair (pair 5) and the largest pair (pair 12) may be recognized with certainty.

Yet the chromosome pattern as a whole is in agreement with earlier reports. Again three chromosomes have submedian and nine more or less median centromeres. The lack of clear-cut differences between *P. rubens* and *P. mariana* chromosomes is in accordance with an apparently close genetic relationship evidenced by affinities in external plant morphology (10), and by artificial (2) and natural hybridization (4). The absence of distinct differences in chromosome morphology is also in agreement with the hypothesis that in most conifer genera interspecific diiferences are generally small, in consequence of evolutionary divergence by gene mutations rather than by struclural rearrangements (3,8). In the genus *Picea* this hypothesis still needs to be tested further by detailcd studies of the many cytologically unlrnown species.

Acknowledgements

Grateful acknowledgement is made to Dr. K. H. ROTHFELS and Dr. P. SARKAR, University of Toronto, for helpful advice throughout the course of the investigation.

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Viable Pine Pollen Stored 15 Years Produces Unsound Seed

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(Received for publication September 17, 1962)

Controlled pollination in 1960 with viable and nonviable samples of stored pine pollen produced only hollow seeds. The samples were from pollen used for a previous study which tested germination *in vitro* of pollen of seven species of pine.[1]) These pollens had been stored 15 years at 0° C. and 5° C. and at relative hurniaities of 10, 25, 50, and 75 percent. Only pollen stored at 10 percent relative humidity germinated, and germination in *Pinus ponderosa* was as high as 77 percent. Using samples of viable and non-viable P. *ponderosa* pollen, we made several crosses on three P. *ponderosa* seed trees. Only two crosses on one tree set cones.

One cross used pollen stored at 5° C. and 10 percent relative humidity. This pollen, which had 58 percent germination of the grains *in vitro,* produced 65 hollow seeds. The other cross used pollen that had been stored at 5° C. and 50 percent relative humidity and that had not germinated *in vitro.* From this cross only 11 hollow seeds were produced.

We found that:

1. Tube formation by pine pollen *in vitro* does not necessarily indicate ability to grow for a year through the nucellus and produce viable sperm nuclei;

2. Stored pollen that did not germinate *in vitro* was capable of inducing cone maturation. but incapable of producing sound seeds; and

3. Pollen that germinated *in vitro* produced more, though likewise unsound, seeds than did the non-germinating pollen.

[1]) STANLEY, R. G., PETERSEN, J., and MIROV, N. T.: Viability of pine pollen stored 15 years. Pacific SW. Forest and Range Expt. Sta. Res. Note 173. 5 pp. 1960.