structural characters which are different in these two minerals.

S. DEB.

Laboratoire de minéralogie
du Muséum national d'Histoire naturelle,
Paris,
May 24, 1939.

[1] Orcel, J., "Sur l'emploi de la pile photoélectrique pour la mesure du pouvoir réflecteur des minéraux opaques," *C. R. Acad. Sciences*, 1927, t. **185**, 1055–57; 1928, t. **187**, 1141–43.

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Lethality of Gametes Conditioned by Exchange of Segments between Partially Homologous Chromosomes in a *Nicotiana* Species Hybrid

IN studying the percentage of viable pollen in the species hybrid *N. glauca* × *N. Langsdorffii*, I found that their percentage corresponds approximately to the percentage of dyad and monad microspores formed in the hybrid as a result of non-occurrence of the first or of both meiotic divisions.[1] Studying the viability of the pollen in the species hybrid *Nicotiana Raimondii* ($n = 12$) × *N. tabacum* var. *Tyk-kulak* ($n = 24$) in connection with the dyad formation and the chromosome conjucation during the meiosis, quite different results were obtained. This hybrid, growing in the green-house, usually formed at the end of April (1939) 3–6 bivalents. Pollen-mother cells with 2 bivalents and with more than 6 were rarely found (ca. 6%). At the same time, in about 12–15% of the PMC dyad microspores were found. They usually resulted from non-occurrence of the first meiotic division (*i.e.*, restitution nuclei). When the flowers opened and the anthers dehisced no viable pollen were found. This indicates that both kinds of pollen grains: (1) those having reduced nuclei, as well as (2) those having non-reduced nuclei (dyads) with the total chromatine material from *N. Raimondii* and *N. tabacum* (36 chromosomes), were lethal. The lethality of the first kind of pollen originating from reduced microspores has been usually interpreted in assuming irregular distribution of the hereditary material during the meiosis and formation of tetrad microspore nuclei with incomplete and unbalanced genoms. The pollen originating from dyad microspores have two complete genoms, the whole *Raimondii* genom and the whole *tabacum* genom, nevertheless they were lethal. Non-viability of these pollen-grains is not due to loss of some chromosome fragments as a result of crossing over in inverted region or regions, because one chromatine bridge was very rarely observed (in 0·3% of the pollen-mother cells), during the meiosis. The most probable cause for their lethality is the exchange of segments between partially homologous chromosomes which takes place in each pollen-mother cell between 3–6 partially homologous chromosome pairs (bivalents) following chiasma formation. The reliability of this assumption is supported by the behaviour of the same hybrid plants during the autumn (1938) when their meiosis proceeded at a lower temperature. At this condition the hybrid usually formed 0–4 bivalents, and had in about 18% of the pollen-mother cells (PMC) dyad microspores; ca. 5% of the PMC having asyndesis (no bivalents). They formed then about 0·4% viable pollen grains. These pollen grains probably developed from PMC with asyndesis, in which the first meiosis has failed, thus producing dyad microspores and further pollen with whole chromosome sets and unchanged chromosomes of the parental species *N. Raimondii* and *N. tabacum*. It should be mentioned here that these two species are not closely related. They belong to two different sections —the former to *Rustica* section and the latter to *Tabacum* section.

DONTCHO KOSTOFF.

Institute of Genetics,
Academy of Sciences of U.S.S.R.,
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May 18, 1939.

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