19. On the Chromosomes of Dendrolimus-Moths. II.

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2. *Dendrolimus jezoensis* Mats.

Fig. 1 shows the metaphase polar view of the spermatogonium in a later generation, in which 60 chromosomes are counted. The chromosomes seem to show a similar appearance to the preceding species in the form and arrangement.

In the primary spermatocyte division one finds also 30 chromosomes, as shown in Figs. 2–4. There is no difference, therefore, between the present species and *D. spectabilis*, so far as the number of chromosomes is concerned. The only difference by which these two species should be distinguished in chromosomal characters, seems to be the relative magnitude of the smallest chromosomes. They measure scarcely one fourth the next smallest ones in the present species, while in *D. spectabilis* the corresponding two chromosomes are evidently much larger. Still a question remains, however, whether this difference is definite to this species or due to the individual variation of the chromosome size as often observable between different individuals, because the present material seems not to be sufficient to solve this question.

As all the tetrads divide into two daughter halves, the resulting two daughter nuclei possess the same number of chromosomes as the mother nucleus. Thus one finds again 30 chromosomes in them (Figs. 6*a* & 6*b*), and this number is still more clearly counted in the secondary spermatocyte division as shown in Figs. 7–9.

The central body and its derivative assume the form of a bifurcated filament in the primary spermatocyte (Fig. 5) and a single one in the secondary spermatocyte (Fig. 10). In this respect, the present species cannot be distinguished from *D. spectabilis*.

As noted in the foregoing descriptions, the chromosomes of *D. jezoensis* in the garniture exhibit quite similar appearance to those of *D. spectabilis*, with the exception of two chromosomes in the primary spermatocyte. Recently, Oguma ('30, '32),[1] working on the dragonfly

1) Oguma, K., 1930: Jour. Fac. Sci. Hokkaido Imp. Univ. Ser. VI, Vol. I, No. 1. Oguma, K. & Asana, J. J., 1932: Ibid. Vol. I, No. 4.

chromosomes, discovered an interesting fact that, in the primary spermatocyte the m-chromosome, the smallest autosome, varies its magnitude from species to species in a genus. Whether a similar phenomenon also occurs in the present material, remains still obscure to the writer. The conclusion may be postponed until sufficient material is obtained.

From the literature hitherto published, the chromosome number of moths belonging to the family Lasiocampidae is arranged as in the following table.

Species	Haploid (♂)	Author
Cosmotriche potatoria L.	31	Kernewitz, '14
„ „	31	Beliajeff, '30
Malacosoma neustria L.	31	Beliajeff, '30
Malacosoma castrense L.	31	Kernewitz, '14
Dendrolimus pini L.	30	Kernewitz, '14
Dendrolimus spectabilis Butl.	30	Makino, '33
Dendrolimus jezoensis Mats.	30	Makino, '33

As obvious in this table, the genus *Dendrolimus* constantly possesses 30 chromosomes in the reduced condition in three species studied. As to the case of *Dendrolimus pini* studied by Kernewitz ('14),[1] any other morphological characters than the number of chromosomes are entirely unknown to us, for no figures were shown in his paper. According to Beliajeff ('30),[2] of the Lepidoptera whose chromosomes are hitherto studied, 69 species—about 75%—show the numbers from 28 to 31 in haploid. In this respect, the *Dendrolimus* group, as well as the other members of the Lasiocampidae, is of a general type for the Lepidopteran chromosomes.

For the literature other than noticed the reader may be referred to F. Schrader's "*Die Geschlechtschromosomen*," 1928 and Ch. Schröder's "*Handbuch der Entomologie*," 1927.

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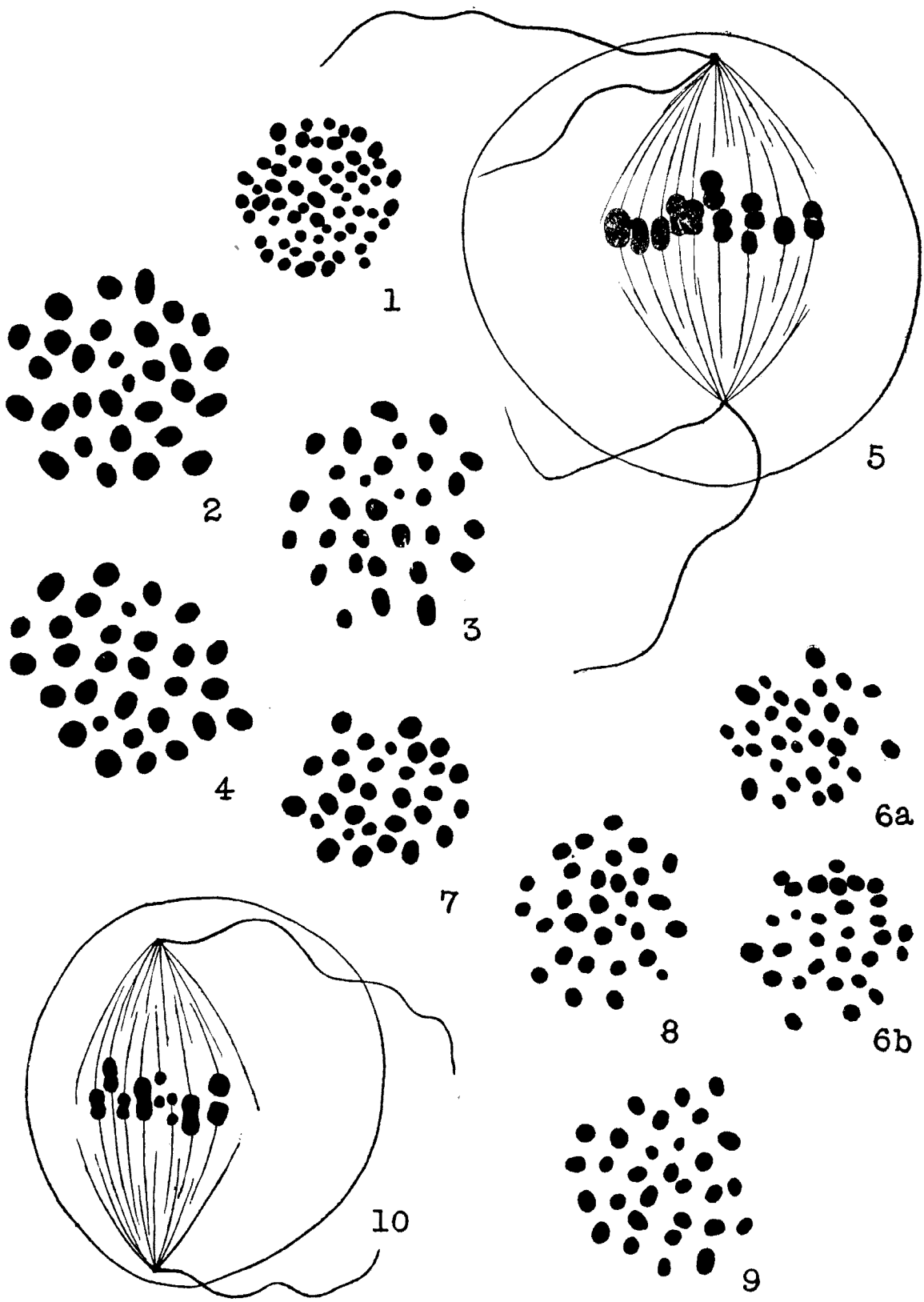
1) Kernewitz, B., 1914: Zool. Anz. 45.
2) Beliajeff, N. K., 1930: Zeitschr. f. ind. Abst. u. Vererb. 54.

Explanation of figures: The figures are from camera drawings made with a Zeiss 1.5 mm. *Obj.* and a K 20× *Oc.*, producing a magnification of about 4200 times.

Dendrolimus jezoensis.

Fig. 1. Polar view of spermatogonial metaphase.
Figs. 2–4. Polar views of primary spermatocyte metaphase.
Fig. 5. Side view of the same.
Figs. 6a & b. Polar views of two daughter sets of chromosomes in anaphase of primary spermatocyte division.
Figs. 7–9. Polar views of secondary spermatocyte metaphase.
Fig. 10. Side view of the same.



Dendrolimus jezoensis.