number of the chinchilla is just the same as that of the guinea-pig, but obviously the chromosome formula is largely different between them. Also the chromosomes of the chinchilla highly differ both in number and constitution from those of *Erethizon dorsatum* as well as *Hystrix cristata*.

The kindness shown to me in the course of this study by Dr. T. S. Painter, Dr. M. J. D. White, and Dr. W. H. Leonard is sincerely acknowledged here.

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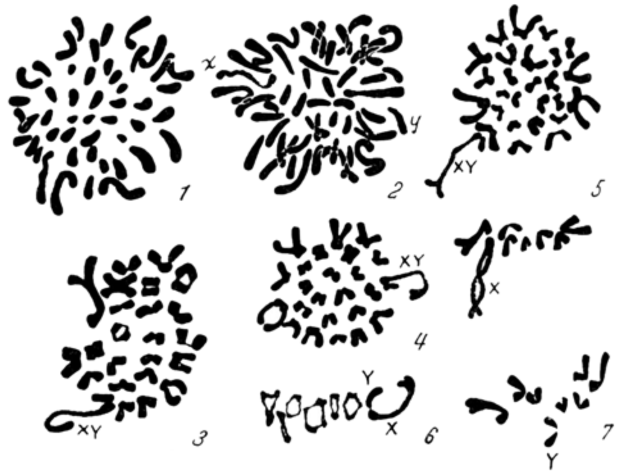
Zusammenfassung

Die Chromosomen des neuweltlichen Stachelschweins und des Chinchillas werden mit denjenigen einiger verwandter Nager verglichen.

Notes on the Chromosomes of the *Peromysci* (Rodentia-Cricetidae)

The deer mouse, *Peromyscus*, is represented by many species and subspecies and has a wide distribution throughout North America. The chromosomes of these field mice were investigated by Cross[1]. His studies were, however, limited to the spermatogonial chromosomes, and the chromosome features in the course of meiosis have remained unknown. The present author has had an opportunity to observe the meiotic chromosomes in some species of deer mice, through the courtesy of L. R. Dice of the University of Michigan, who kindly supplied the material for study.

The forms studied are *Peromyscus polionotus polionotus*, *P. p. leucocephalus*, *P. leucopus texanus*, *P. truei truei*, *P. maniculatus maniculatus*, *P. m. bairdii*, *P. m. blandus*, *P. m. gambeli*, and *P. nasutus*. With the exception of *P. nasutus*, all species observed here showed 24 chromosomes in the haploid set (Fig. 3–4). *P. nasutus* was found to have 26 haploid chromosomes (Fig. 5). There is invariably a heteromorphic bivalent considered as the *XY*-complex in the haploid group of every species under study. It consists of a slender J-shaped *X*-element and a *Y* of a short rod-type. Generally the *X* is characterized by a faintly stained diffused outline, except the proximal end which is densely stained. The *Y* is uniformly stained, showing sometimes a small condensed body at its proximal end. In the first metaphase plate, the *X* and *Y* chromosomes lie in side-by-side association coming together at their proximal dense parts only, while the other parts remain free from close pairing. At the first anaphase, the *XY*-bivalent disjoins unexceptionally, the *X* and *Y* elements passing to the opposite poles (Figs. 6–7). The type of association between the *X* and *Y* chromosomes found in the Peromysci closely resembles that observed by Makino[2] in the red mice, *Apodemus* (Muridae-Murinae). Similar features of the *X* and *Y* chromosomes have also been found by Matthey[3] to occur in *Microtus pennsylvanicus* (Microtinae) and *Sigmodon hispidus* (Cricetidae). Further, the J-shaped *X* element and the rod-shaped *Y* element of the Peromysci are in sharp contrast to those of *Cricetus cricetus*, *Cricetulus griseus* and *Mesocricetus auratus*, which are of remarkably large V-shape.



Figs. 1–7.—Chromosomes of *Peromyscus*. *1*, spermatogonial metaphase of *P. polionotus leucocephalus*. *2*, spermatogonial metaphase of *P. truei truei*. *3*, first spermatocyte metaphase of *P. truei truei*. *4*, first spermatocyte metaphase of *P. m. blandus*. *5*, first spermatocyte metaphase of *P. nasutus*. *6*, First metaphase, side view, of *P. m. blandus*. *7*, first anaphase of *P. truei truei*.

The diploid number of chromosomes was observed to be 48 in *P. polionotus leucocephalus*, *P. m. maniculatus* and *P. truei truei*. Everey species is characterized by having a uniform complex which consists of a pair of large J-shaped chromosomes, a pair of medium J-shaped ones and a pair of small V-shaped ones, together with the remaining rod-like elements. But a considerable difference seems to occur in respect to length of chromosomes between species. On the whole, *P. polionotus leucocephalus* is characterized by having shorter chromosomes (Fig. 1), while the individual chromosomes of *P. truei truei* are remarkably much longer (Fig. 2). Since these differences in length of chromosomes are demonstrated in the preparations made by the same method[1], they may be accepted as chromosomal characteristics particular to each species.

The author wishes to investigate comparatively the chromosomes of the Peromysci, more thoroughly and with more satisfactory material, in the not-too-distant future, on account of the interest in the genetic as well as in the evolutionary relationship between species and subspecies.

Here, thanks should be expressed to Dr. L. R. Dice, Dr. T. S. Painter, and Dr. M. J. D. White for their kind help in accomplishing this study.

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Zusammenfassung

Das miotische Verhalten der Chromosomen von Nagern, besonders die Morphologie der *X*-*Y*-Geschlechts-Chromosomen, wird beschrieben.

[1] J. C. Cross, J. Morph. *52*, 373 (1931); Cytologia *8*, 408 (1938).
[2] S. Makino, J. Morph. *88*, 93 (1951); Cytologia *16*, 288 (1952).
[3] R. Matthey, Chromosoma *5*, 113 (1952).

[1] Fixed with Flemming's solution without acetic acid and stained by Newton's gentian violet method (modified by Dr. M. J. D. White).