Chromosomenverhaltinisse bei der Spermatogenese solitarer Apiden (Osmia oornuta Latr.)

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The author attempts to combine biological data - his own and data culled from the literature - with cytological observations in an attempt to shed light on the cytology of sex determination in these bees.

Perhaps the greatest value of this paper in the present program will lie in the 8-page bibliography and in the tables showing the sex of bees emerging from the variously-placed cells in nests.

One table - (table 14) was unintelligible to the abstracter because there was no key to the symbols used.

After introducing his subject and describing his methods, the author discusses the contemporary knowledge regarding reproduction in solitary bees. He calls particular attention to Fabre's observations that while a linear nest or a nest otherwise capable of accommodating a female's entire quota of eggs will generally have a goodly number of cells of each sex, these separated in such a way that the 66 lie in the cells nearest to the exit; it is also true that in nests of a size permitting only a fraction of the egg quota the cell nearest the exit also contains the 6 regardless of what the relative position of that cell would have been in a nest containing the whole quota. Cell size and provisioning supposedly play a part in this, as is indicated further by cases where cells are closely packed so that they are of uneven size - the larger 6, smaller 6. This seems particularly significant in the case of Osmia because this bee must often take "potluck" for nesting places, and apparently the egg quota is often distributed over several nests. The author appears to feel, after a study of nests described in the literature and observed by himself that Fabre's observations are pretty generally true. The significance of this lies in the conclusion that these data support the idea that the "sex" of a given larva is determined at the time of oviposition. These conditions fit the Dzierson Theory.

There follows a description of the morphology of the testes and a description of the cytology of spermatogenesis. Cytological observations indicate that there is but one nuclear division and that reductional (16 reduced to 8). On the other hand biological observations indicate parthenogenetic development (reduced number). The author confesses confusion at this point. He then goes on to discuss the cytology of gametogenesis in hymenoptera and to present explanations offered by Petrukekisch, Nachtsheim, Doncaster, and Neves. He finally suggests that in Osmia cornuta there may be spontaneous increase in chromosomes at the time of early cleavage and that this might result in a chromosome number of 16 for males, and 24 from 99.

There follows a theoretical-cytological discussion of possible chromosome theories consistent with the Dzierson theory (chromosome balance, autochromatin x-substances, etc.)

Authors conclusions consist of a long list of cytological minutiae.