in 10–15 per cent of the litters, do not seem to be otherwise abnormal. They are physically well proportioned, as they look rather like miniatures of their normal size counterparts. They are as quick and lively, if not more so, than mice of the same age weighing twice as much. They develop a good set of teeth with which they feed themselves eagerly and bite vigorously when handled for inoculation.

We are trying to determine how long these mice remain susceptible to the virus or fail to reach normal growth. We are also interested in determining how early in life differences in body-weight are apt to influence the response of the mice to vaccinia infection. This information might provide some insight into the difficulties often encountered when attempting to isolate in new-born animals viruses present in the inoculum in unknown amounts. With the virus dose used in the present experiments the 10-day-old mice were the youngest to become resistant to the virus (see Table 1) under the influence of increasing body-weight. With lower doses of virus similar findings have been observed in younger mice. Seven-day-old mice, which on average weighed 4·7 g, survived inoculation with 5×10^3 vaccinia infective particles, whereas 17-day-old mice, which on average weighed 3·3 g, were 100 per cent susceptible to the lethal effects of the same virus dose.

It would seem possible from these findings that differences in the response to experimental viral infection among young animals of the same age and strain as well as of different strains or species might be related from birth to differences in their level of growth. Furthermore, that the age of young hosts is no accurate indication of their probable response to experimental viral infection unless it is correlated with their body-weight.

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[1] Duran-Reynals, M. L., *Biologie Medicale*, **52** (1), 76 (1963).
[2] Howes, D. W., *Austral. J. Exp. Biol.*, **32**, 258 (1954).

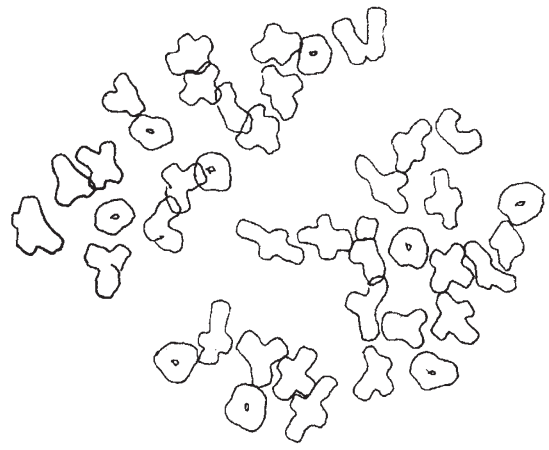

Fig. 1. Diakinesis of *Elaphoglossum flaccidum* (Fée) Moore, $n = 41$. Aceto-iron-haematoxylin squash (× *c.* 2,000)

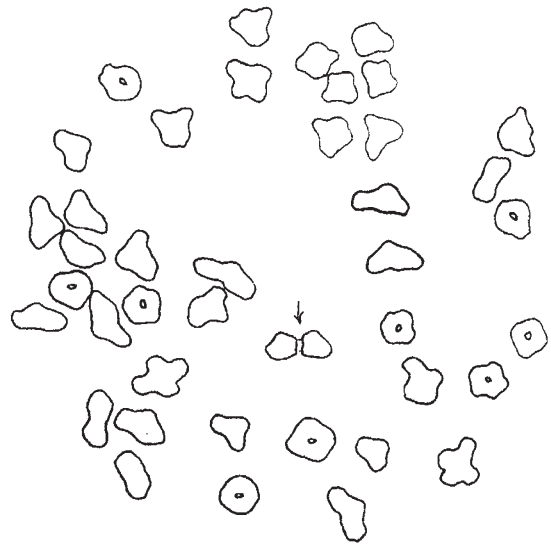

Fig. 2. Prometaphase I of *Hymenodium crinitum* (L.) Fée, $n = 41$ (forty bivalents and two halves of a bivalent). Aceto-iron-haematoxylin squash (× *c.* 2,000)

CYTOLOGY

Chromosome Numbers of *Elaphoglossum* and *Hymenodium*

THE fern genus *Elaphoglossum* is one of the largest in the family Aspidiaceae. Moreover, some taxonomists would like to place it in a separate family, Elaphoglossaceae[1]. Of more than four hundred species of *Elaphoglossum*, most are to be found in tropical America. Some of the species deviate so much from the type of *Elaphoglossum* that they have been separated from the genus, and one of them is the species *Elaphoglossum crinitum*, which has been renamed *Hymenodium crinitum* by Fée and *Dictyoglossum crinitum* by J. Smith. Copeland, however, prefers the name *Elaphoglossum crinitum*[2].

Only very few species of the genus *Elaphoglossum* have been studied cytologically. *Elaphoglossum hirtum* (Sw.) C.Chr., $n = 82$; *E. krajinae* Biswas, $n = 41$; and *E. spathulum* (Bory) Moore, $2n =$ about 160, were studied by Manton and Sledge[3]. Two other species, *E. conforme* Sw., $n = 82$, and *E. latifolium* Bett., $n = 82$, were studied by Bir[4]. All these species seem to have the basic chromosome number of forty-one, although most of them are polyploids.

Material for the present study was collected from El Verde rain-forest in the eastern part of Puerto Rico, in August 1964. The herbarium specimens were identified by Dr. R. Woodbury, of the Agricultural Experiment Station at Rio Piedras. Sporangia were fixed in acetic alcohol (1 : 3) and stained in acetic–iron–haematoxylin solution. The chromosomes were counted at the late meiotic prophase and first metaphase stages.

In both species of *Elaphoglossum* investigated, *E. flaccidum* (Fée) Moore, and *E. firmum* (Mett.) Urban, forty-one bivalent chromosomes were counted. But in the meiosis of *Hymenodium crinitum* (L.) Fée, the chromosome number often seems to be forty-two. Careful investigation of meiosis, however, reveals that the chromosomes of one bivalent very often part company as early as diakinesis. Actually the true number of chromosomes is forty bivalents and two halves of a bivalent, which is the same as in the *Elaphoglossum* species now studied. Another obvious similarity between the meiotic chromosomes of *Elaphoglossum* and *Hymenodium* seems to be the relatively large number of ring bivalents.

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[1] Ching, R. C., *Sunyatsenia*, **5**, 201 (1940).
[2] Copeland, E. B., *Genera Filicum* (Waltham, Massachusetts, 1947).
[3] Manton, J., and Sledge, W. A., *Phil. Trans. Roy. Soc.*, B., **238**, 127 (1954).
[4] Bir, S., *Nucleus*, **3**, 121 (1960).