both between the adults and during the immature stages of development. The populations reached
equilibrium between the 8th and the 15th week, and thereafter oscillated around the same level.
After 52 weeks samples were taken from both populations and from the original mass culture
stocks, and a new generation was produced at 25°C under uncrowded conditions. From this prog-
ey different amounts of flies were placed in 1/2-pint culture bottles, and transferred regu-
larly to fresh bottles (3 times a week at 25°C, twice at 19°C). A total of 10 transfers were
made at 25°C for each level of parental density, and 6 transfers at 19°C. The mean number of
flies produced per bottle are presented in Table 1. In all the six cases studied the flies

<table>
<thead>
<tr>
<th>Number of Parents</th>
<th>Experimental Population</th>
<th>Control</th>
<th>Difference</th>
<th>Experimental Population</th>
<th>Control</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>396</td>
<td>363</td>
<td>33</td>
<td>233</td>
<td>208</td>
<td>25</td>
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<tr>
<td>300</td>
<td>423</td>
<td>381</td>
<td>42</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1000</td>
<td>513</td>
<td>495</td>
<td>18</td>
<td>477</td>
<td>379</td>
<td>98</td>
</tr>
<tr>
<td>1500</td>
<td>543</td>
<td>497</td>
<td>46</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

from the experimental populations produced more progeny than the controls. It seems likely
that, under the action of strong natural selection, new genotypes have been selected in the ex-
perimental populations which improved their fitness, as measured by the number of progeny pro-
duced per food unit.

Reference: Ayala, F. J. 1965. Relative fitness of populations of Drosophila serrata and
Drosophila birchii. Genetics, in press.

Thompson, Peter E. Iowa State University. The killing and resorption of eggs after
injection of Drosophila females with actin-
omycin-D.

under sterile conditions. While the 10-gamma solution did not reduce fertility, the 50-gamma
solution invariably led to a permanent or temporary cessation of egg laying.

In the course of tests of the effect of actino-
mycin-D on crossing-over, females were injected
with about 0.25 microliter of dissolved material
at concentrations of 10 and 50 microgram/milli-
liter. Injection was via the thorax. Neither
concentration had a marked effect on survival
under sterile conditions. While the 10-gamma solution did not reduce fertility, the 50-gamma
solution invariably led to a permanent or temporary cessation of egg laying.

In the 50-gamma series, females were inseminated during their first imaginal day and in-
jected at 1 1/2 days. Each female laid 2-5 eggs soon after treatment, after which oviposition
ceased for at least 6-7 days. Following this lapse, roughly one-third (37/124) of the females
showed a recovery of fertility. The pattern of crossover effect after recovery was comparable
in its time scale to effects of the 10-gamma treatment, heat treatments, etc., as if no marked
retardation of surviving oocytes were involved. This included the observation of multiple rare
exchanges, presumably gonial in origin, in individual females from the tenth day on.

Females examined early in the sterile period show degeneration of all advanced egg stages,
and the ovary is distended with decomposition products. At day 6 (about 4 1/2 days after in-
jection) most of this debris has been resorbed and oocytes up to about stage 3 or 4 can be seen.
Again, the rate of development of these surviving oocytes must be nearly normal, for their
maturity is complete in some females within another two days, at the return of fertility. A
more thorough treatment of this aspect is projected, hopefully to establish a time scale of
oogenesis similar to that found by Welshons and Russell (PNAS 1957) in their irradiation of Dro-
sohila males. (Research supported by U.S.P.H.S. Grant GM 09912).