Leahy, Sister Mary Gerald C.S.J. Mount St. Mary's College. Egg deposition in D. melanogaster increased by transplant of male paragonia.

Mated females of D. melanogaster (Canton-S) have a higher oviposition rate than virgins. Both the sperm and paragonial fluid which the female receives at mating are possible sources of a stimulant for oviposition. The relative effect of the two materials was therefore in question. The answer was determined by transplant of each substance into the thorax of two day old virgin females.

The glands and testes were removed into insect saline. A virgin female was etherized, an incision made into the pleural region of the thorax and a single gland inserted. Sections of testis, approximate in size to the gland were transplanted into other virgins. The paragonia and testes were obtained from males which were three days old and had been separated from females for two days. After the operation the flies were placed in individual containers which had media with lamp black. Egg count was made four days after transplant.

A striking rise in egg deposition followed transplant of paragonia. Figure 1 is a summary of five experiments which gave significant evidence that these glands provide an

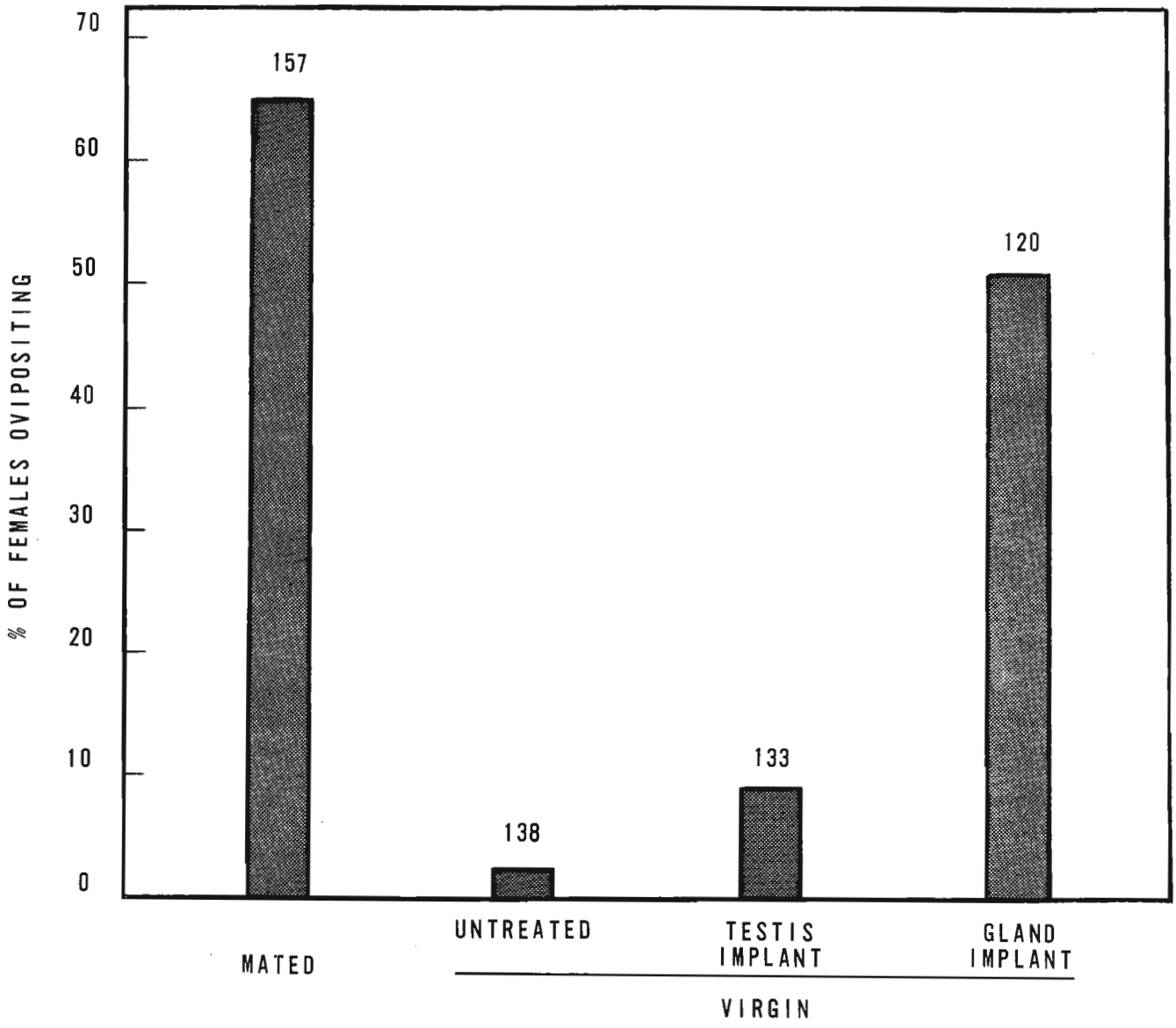

Fig. 1.— Oviposition in females of *Drosophila melanogaster*.

oviposition stimulant received by the female at mating. An average of 11% of the virgin females oviposited when testes were transplanted, whereas an average of 52% oviposited after paragonia transplant.

Non-specific activity of the paragonial substance is indicated in our current investigation of other Diptera. Chemical study of paragonia extract is in progress.

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The mutagenicity of phenyl-N-lost-derivatives.

A number of bifunctional chloroethyleneimines with different basal constitution have been tested on their mutagenic activity on the Berlin wild stock of Drosophila melanogaster by means of the Basc method in successive three-day brood periods. The drugs were applied orally.

The test substances were of the type R-  -N $\begin{matrix}CH_2CH_2Cl\\CH_2CH_2Cl\end{matrix}$, R being the symbol for different substituents.

The mutagenic activity of the compounds tested declined in the following order of substituents (R): $NH_2 > H \gg OCH_3 \tilde{} CHO > Cl$ = control. The differences in mutation rates were in part restricted to single broods. There was no strict correlation between chemical reactivity and mutagenicity (table 1). The mutation rates increased with prolongation of the feeding period. The mutagenic action of C.B. 1077 (R = CHO; very low reactive) demonstrates that chemical reactivity tests alone are not suitable for predicting whether an alkylating drug is mutagenic or not. The most toxic compound was C.B. 1074, a substance with only a low reactivity. The most effective sterilizing and mutagenic compound was C.B. 1128. The mutagenic action of C.B. 1128 could be depressed by administering l-cysteine simultaneously.

Table 1. The mutagenicity of p-N-bis-(β-chloroethyl)-anilines of the type R-  -N $\begin{matrix}CH_2CH_2Cl\\CH_2CH_2Cl\end{matrix}$

SUBSTITUENT	n lethals / n test chromosomes = % lethals brood I	II	III	Totals	reactivity
	a) dose: 10^{-2} M; feeding period: 3 days				
R=NH_2 (C.B. 1128)	t e s t - ♂ ♂	s t e r i l e			very high
R=H (C.B. 1074)	a b s o l u t e l y	t o x i c			low
R=OCH_3 (C.B. 1045)	8/475=1.7%	3/585=0.51%	7/703=1.0%	18/1763=1.0%	high
R=CHO (C.B. 1077)	4/426=0.94%	3/242=1.2%	3/328=0.91%	10/ 998=1.0%	very low
R=Cl (C.B. 1053)	-/192=0.00%	-/156=0.00%	1/259=0.39%	1/ 607=0.16%	very low
	b) dose: 10^{-3} M; feeding period: 3 days				
R=NH_2 (C.B. 1128)	35/943=3.7%	18/816=2.2%	9/791=1.1%	62/2550=2.4%	very high
R=H (C.B. 1074)	a b s o l u t e l y	t o x i c			low
	c) dose: 10^{-2} M; feeding period: 1 day				
R=NH_2 (C.B. 1128)	12/361=3.3%	1/306=0.33%	5/269=1.9%	18/ 936=1.9%	very high
R=H (C.B. 1074)	8/724=1.1%	6/727=0.83%	5/441=1.1%	19/1892=1.0%	low
R=OCH_3 (C.B. 1045)	3/350=0.86%	-/369=0.00%	-/333=0.00%	3/1052=0.29%	high
R=CHO (C.B. 1077)	4/756=0.53%	1/651=0.15%	1/575=0.35%	7/1982=0.36%	very low
R=Cl (C.B. 1053)	1/690=0.14%	-/481=0.00%	-/343=0.00%	1/1511=0.07%	very low
	Control 0.10 ± 0.03%				