Agol, I.J. New Method of Detecting Lethals in the X-chromosome. Up to the present time Muller's method ClB has been used to detect lethals in the X-chromosome. At our laboratory we have adapted the method of y B sc^4 on the basis of the following considerations:

(1) y B sc^4 represents an inversion involving almost the whole length of the X-chromosome (from sc to bb) while the ClB inversion is far shorter (approximately from bi to Bx). Therefore y B sc^4 excludes the possibility of getting single cross-overs on both sides of the X-chromosomes.

(2) By the ClB method half of the chromosomes tested are lost, as only half of the progeny get the ClB chromosome in F_1; while by crossing the X-chromosomes tested (males) with homozygous y B sc^4 females nothing is lost.

(3) The y B sc^4 method facilitates the establishment of balanced cultures with lethals, because 1/y B sc^4 obtained in F_1 and inbred individually with their y B sc^4 brothers will give two categories of females: 1/y B sc^4 and y B sc^4/y B sc^4 which are easily distinguished one from the other, while crossing 1/ClB with any male gives two kinds of females, which it is impossible to differentiate phenotypically.

In case a new lethal has arisen in a cross with y B sc^4 we do not get maleless cultures in F_2, but all the males instead of being of two categories will be of one kind only, namely y B sc^4.

The method is used as follows. The chromosome tested (male) is crossed with a virgin homozygous female y B sc^4/y B sc^4. In F_1 all females are picked out and inbred individually with their brothers. If only one class of males is obtained in F_2, this indicates the presence of a lethal in the X-chromosome under investigation.

Muller, H.J. Accumulation of Mutations (Negativing of Natural Selection. 1. In chromosome 1 (possible in ♀♀ only) (C's B method). Key: Cs is inversion preventing crossing-over in right portion of 1 and containing gene making ♂♂ sterile. B = Bar eye. Dl-49 is inversion, preventing crossing-over to left of g in 1. lz^s = lozenge-spectacled eye, sterile in homozygous ♀. w = white eye.

P_1 Cs,B/ dl-49, w lz^s ♀ X dl-49, w lz^s♂♂ (many single-♀ cultures).

F_1 Cs,B/dl-49, w lz^s ♀ dl-49, w lz^s/dl-49, w lz^s ♀ (sterile)
Cs,B/Y ♂ (sterile) dl-49, w lz^s/Y ♂

Verify presence of B ♂♂ in each F_1 culture as preliminary test. Then breed F_1 ♀♀ in mass cultures X brothers, keeping those from different P_1 cultures separate.

F_2 offspring as before and so on to F_n (balanced ♂).

Final test: single ♀ from each culture of F_n is bred to her brothers. If lethal is present in Cs B chromosome, no B sons will appear in F_n + 1.