This method was used to make a map of the banding pattern of section 1-4 of the female X chromosome of D. melanogaster (fig. 3). The pattern of bands is the same with all fixatives used. From 35 series of sections the maximum number of bands was determined and mapped. A comparison of this map with the revised map of Bridges (2) revealed characteristic differences. The electron microscopical map contains a maximum of 85 bands from X-1A to X-3F, whereas the map of Bridges contains 136 bands in this section. This discrepancy can partly be explained by the absence of double bands in the EM-map in 36 of the 38 band pairs indicated by Bridges (see Fig. 3). The remaining difference of 33 bands consists mainly of very thin bands on the map of Bridges.

It is evident that the reduction in the number of bands to about 60% of the number indicated by Bridges may have an important bearing not only on the correlation of known genetic factors with particular bands, but also on the calculation of the mean DNA content per band.

Lit: (1) Sorsa and Sorsa, Chromosoma 22 (1967); (2) Bridges, J. Hered. 29 (1938).

Hotchkiss, Sharon K. and J. K. Lim.
Wisconsin State University, Eau Claire, Wisconsin. Mutagenic specificity of Ethyl methanesulfonate affected by treatment method.

Preliminary experiments were conducted to determine if there is a difference in the mutagenic effects of Ethyl methanesulfonate (EMS) when fed and when injected into Drosophila. 0.025 M EMS in 1% sucrose solution was prepared by adding 0.24 ml of EMS (Eastman Kodak) into 100 ml of 1% sucrose solution and aerating for a few minutes with a hypodermic syringe. Two-day old males of the constitution sc8.Y.B/s3Y.s/Y6+Ys+ were injected with approximately 0.16 microliter of the EMS solution. Twenty-four hours after injection, the males were mated individually to two virgin females of the composition ysc51ln49sc8; dp bw; st pP. Males of the stock used in the injection experiment were fed on the EMS solution for 24 hours and were mated individually to two virgin females of the stock used in the injection experiment. The matings in each experiment were kept for four days, after which males were discarded. Upon eclosion of F1 flies, females were sib-mated for sex-linked recessive lethal detection and F1 males were mated back to two virgin females of the composition ysc51ln49sc8; dp bw; st pP for detection of translocations II-III, Y-II, Y-III, and Y-II-III.

Of the 19 translocations detected, nine were TII-III and the remaining 10 were TY-III. None involving Y-II and Y-II-III were detected. A random sample of three from the nine TII-III was taken for salivary chromosome examination. All three samples showed reciprocal translocation between the second and third chromosomes, confirming the detection based on the genetic data.

The results indicate a quantitative difference in the effects of EMS when fed and when injected since the frequency of sex-linked recessive lethals induced by feeding was nearly ten times the frequency induced by injection. A qualitative difference, the production of translocations when fed but not when injected, is strongly suggested by these results, however, larger scale experiments will have to be conducted to eliminate the possibility that this, also is a quantitative difference only.