A somatic exchange will produce a twin spot in the eye consisting of tissue next to a patch of echinus tissue, these spots being located in the normal faceting and normal facet arrangement. The presence of Dp(wm) will cause an area of wild-type pigmentation in the same eye.

When twin spots were induced by irradiation at 40 hrs, the size and shape of the twin spots were much the same as that of the variegated tissue. The accompanying figure illustrates one such eye. Although the precise shape of the echinus area is difficult to delimit by visual inspection, its general outline is obvious. The areas of different pigmentation can be delimited quite precisely. The ambiguities in the outline of the echinus area prevented the full utilization of the experimental design, which had incorporated the homozygosis for Ys, in the white member of the twin spot, to see if there was a sector effect of additional heterochromatin when the variegated tissue partially covered both members of the twin spot.

A series of eyes similar to the one pictured have provided the critical evidence that the pigment potentialities of the developing variegated eye anlage are determined during the end of the first larval instar. (Studies supported by an NSF Senior Postdoctoral Fellowship).