References: Gerasimova, T.I. 1981, Mol.Gen.Genet. 184:544; Golubovsky, D.M. 1979, Genetika (Rus.) XV:1599; Gerasimova, T.I. DIS in press; Chow j. et al. 1979, Proc.Natl.Acad. Sci. USA 76:4020.

Gilbert, D.G., W.T. Starmer & M-A. Lachance.* Syracuse University, Syracuse, New York and *University of Western Ontario, London, Ontario, Canada. Drosophila collected in Southwestern Ontario.

Drosophila were collected July 17-18, 1982, from banana baits in an oak-pine forest in Pinery Provincial Park of Ontario, on the east coast of Lake Huron. These flies were plated to enumerate their yeast content, to be reported elsewhere. Collections were made at 0700 to 0900 hr in a 3000 sq. m area. The table lists species and numbers collected.

Species	Number	Species	Number
Sap feeders:		Fungus feeders:	
D. affinis	93	D. quinaria	3
D. athabasca	23	D. falleni	31
D. algonquin	13	D. recens	1
affinis group females	56	D. putrida	9
D. robusta	17	D. testacea	1
D. melanica	7		
melanogaster group females	5	Chymomyza amoena	12
D. busckii	1		
D. hydei	1		

Goetz, K.G. & R. Biesinger. Max-Planck-Institut f. biologische Kybernetik, Tuebingen, FRG. Wind-controlled selection of motion detectors in the eyes of D. melanogaster.

Visually induced responses such as the optomotor control of course and altitude in flies require spatial integration of motion within the retinal images. Overlooking flexibility in the optomotor system seemed to be justified as long as the flies were held in a steady-state of visual stimulation. Symptoms of flexibility in the optomotor system of Drosophila (Heisenberg & Wolf 1979; Wolf & Heisenberg 1980) and Syritta (Collett 1980a & 1980b) only appeared when the flies were allowed to control the direction and speed of the stimulus. The occasional suppression, restriction and shift of motion-attention in these flies demonstrate that they are capable of restricting spatial integration to selected areas of their motion detector networks.

Recent observations extend the notion of flexibility to properties of the optomotor control system which have been attributed, so far, to the neural hardware of these networks (Buchner, Goetz & Straub 1978; Goetz & Buchner 1978). The 'preferred directions' in the Table are the averages of the direction of maximum sensitivity of the motion detecting system associated with the altitude control response of Drosophila. The angular representation of these directions refers to the frontal (0°), and dorsal (90°), coordinates of the retinae on either side. The data were obtained under condition of steady-state stimulation. They show the influence of head wind on the preferred direction, and the absence of this influence after immobilisation of the antennae. The shift of the preferred direction is specific to the altitude control system. No such effect has been found in the course control system of Drosophila. The shift appears sufficient to compensate the expected decrease of body angle upon transition from hovering to cruising flight. This may help to maintain a vertical preferred direction for altitude control, regardless of the flying speed.

	Preferred direction of motion (deg.)		
Antennae	tail wind	no wind	head wind
free	66	62	98
fixed	72	74	77