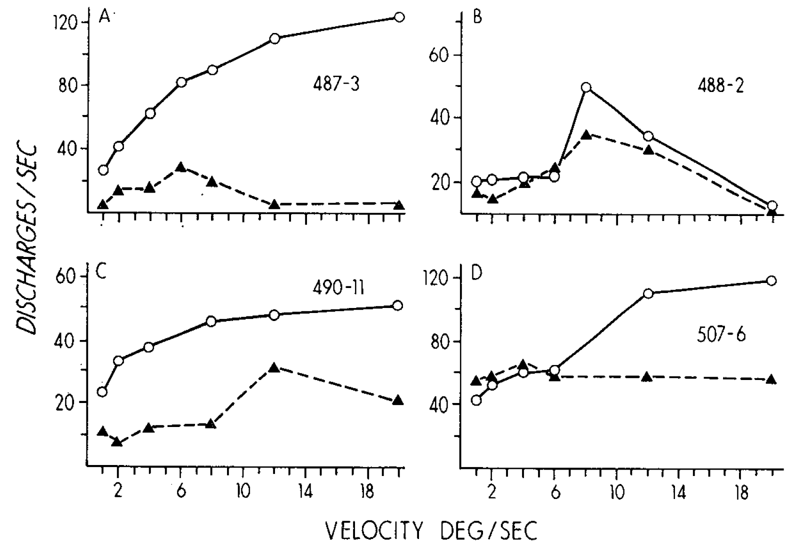

FIG. 2. Response of four units to movement of a line of light at different velocities in the direction giving maximal response (circles) and with direction reversed by 180° (triangles). Each point represents average of 10 samples. Three units (*A, C, D*) are direction sensitive, but only at certain velocities. The other (*B*) shows a clear difference only at one velocity. It had smallest receptive field, 0.9 deg^2, as measured by a flashing spot. Others were 12.3, 5.5, and 57.4 deg^2 for *A, C,* and *D,* respectively.

of movement was rotated away from the preferred direction and was usually minimal beyond ±45°. Measuring preferred direction to the nearest octant, there was no indication, neither statistical (chi-square test, N = 95) nor from casual observation, that within the population of units examined one direction occurred more frequently than another. For 38 units with elongated receptive fields the preferred direction was parallel to the major axis in 17, to the minor axis in 16, and to neither in 5. Many of the units responding to moving white lines or spots responded equally well to dark lines or spots moving in a lighted field. Three hypercomplex units responded only to movement of small targets and gave no response to movement which covered more than the receptive field, e.g., to movement of colored photographic slides projected on the screen.

For five units it was noticed that the response to movement of a spot or line of light was greater when contrast was reduced by introducing background illumination. Unit *723-2,* for example, responded to a 0.6° diameter light spot, but not a dark spot, moving in one direction into its 1 x 2° receptive field, and responded more weakly for movement in the opposite direction, again as the spot entered the receptive field. When the room lights were on, the average number of spikes per traverse of the spot at a velocity of 8°/s in the preferred direction was 4 times greater than in darkness (28.3 vs. 6.8 spikes). Background discharge was infrequent in either condition.

The "spontaneous" discharge of units sensitive to direction of movement was not statistically different from that of units insensitive to direction, there being a very large range of values in each case.

To determine the latency of the response to movement, the shift in timing of the maximum average response was measured for two velocities of movement. This assumes, of course, that the point in the receptive field eliciting the maximal response remains the same for the two velocities, which is probably valid if the velocities are not too disparate. It is also essential that there be no interaction between movements in opposite directions, and thus a pause of 1.5–2 s was inserted between each traverse of the target. The measurements for 16 units suggest that the time which elapses between movement of the stimulus into the receptive field and its alteration of unit discharge in striate cortex is, in