

## BIOLOGY

## Effects of Veiling Glare in Binocular Vision

T. Murray Martin and R. W. Pickford have reported an experiment on the effects of veiling glare on size perception in monocular vision<sup>1,2</sup>. A differential veiling glare is often present in fog vision, when one object is seen through more fog than another. The present experiment, which was on binocular vision, dealt with size and distance perception when two similar objects were seen through a veiling glare greater over one object than over the other.

A box blackened inside was divided into two sections by a milk glass panel. Eyeholes in one wall and an opening opposite gave the subject an unbroken field of vision about one metre by two, at three metres distance. In the right-hand section were two 60-watt lamps. Light from either of these, passing the milk glass, produced a veiling glare in the subject's eyes, by reflection from a piece of plate glass set across the left-hand section at 45° to the line of vision. The lamps were set apart so that either produced a glare about twice as intense at one side of the visual field as at the other. The subject saw two white disks 11 cm. in diameter standing about 60 cm. apart on a blackened table, against a black background, lit by a 40-watt lamp above his head. He could vary the distance and apparent size of the disks by pulling strings. They varied slightly in relative height but not in apparent distance apart. Either disk could be used as a standard at 300-cm. distance. The greater glare could be on the right or left. The variable disk could be set initially too far away or too near. The eight possible combinations of conditions were used in turn and an equal number of readings taken for each.

Subjects 1 and 2 were instructed to move the variable until it seemed at the same distance as the standard. They often made a rather wide adjustment, were then dissatisfied and made a narrower adjustment. They said the wide difference represented apparent equality of distance, but left apparent inequality of size. If these attitudes to size and distance alternated unconsciously in fog vision in everyday life it might give rise to serious accidents. The remaining subjects were tested twice, first for distance and then for size perception. All agreed that equality for apparent distance left inequality of apparent size and vice versa.

Subject	Method	Mean reading cm.	Number	S.E. cm.	<i>p</i> .
3 m.	Distance	- 4.1	80	1.20	< 0.01
6 f.	"	+ 7.5	40	1.86	< 0.01
9 f.	"	+ 4.1	40	1.04	< 0.01
5 m.	Size	+ 2.4	24	1.05	0.05-0.02
8 f.	"	+ 9.2	24	2.16	< 0.01

For five of the nine subjects the differential veiling glare had a measurable effect. This is shown in the accompanying table, where the mean positions chosen for the disk under greater glare, measured from the other disk, are given for these subjects. The sexes of the subjects, numbers of readings, standard errors and probabilities of the means are shown. Subject 3 tended to see the veiled disk as if

farther away than the other (working by distance). Subjects 6 and 9 saw it nearer (by distance); subjects 5 and 8 saw it as if larger (by size).

Examination of the results by the analysis of variance enables us to draw the following conclusions: (a) The eight conditions, taken together, produced significant differences for all subjects but 4 and 7, working by distance. (b) The time order, indicating practice, produced no appreciable effect. (c) Change from variable-near to variable-far produced significant effects in subjects 3, 5 and 9, and doubtful in 7 and 8, working by distance; but only in 3 and 6 by size. (d) Change from variable under more to variable under less glare produced significant effects for subjects 3, 6 and 9 working by distance; but only for subject 8 by size. (e) Change from variable left to variable right produced significant effects for all but subject 7 (doubtful) working by distance; and for subjects 3, 6, 7 and 9 by size. (f) The smallness of variances due to interactions of conditions indicates that the factors mentioned above were effectively independent.

All subjects consistently over- or under-shot the mark when working for distance; by size all under-shot it but subject 9, who was inconsistent.

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<sup>1</sup> NATURE, 141, 371 (1938).

<sup>2</sup> Brit. J. Psych., 29, 91 (1938).

## Changes of Average Maternal Age

IN a report in NATURE of March 18 of an address delivered by Dr. L. S. Penrose to the Industrial Section of the British Psychological Society on February 8, the following sentence occurs: "When the birth-rate is falling, the average maternal age [average age at child-birth] will probably become greater". In support of this view it is stated that Dr. Penrose estimates the average maternal age in England at the present time at 29 years, whilst, in Japan (with a much higher birth-rate), it is said to be 26 years.

In the case of England and Wales, on account of defectiveness of birth registration prior to the passing of the new Population (Statistics) Act last year, it is unfortunately impossible to estimate accurately the average maternal age for any past period, except perhaps 1921 and 1931, for which certain approximate figures derived from census data are available. For certain European countries, however, the average maternal age at various periods may be readily calculated from published data. The following estimates are derived from figures found in Kuczynski's "The Measurement of Population Growth".

It will be seen that, contrary to Dr. Penrose's conjecture, the average maternal age falls along with the birth-rate. Reverting to Great Britain, it happens