

numerical values deduced from the above formulae are collected in Table 7.

TABLE 7

*Diameter  $y'$  and area  $s$  of the retinal image of a circular source of apparent diameter  $u$  (solid angle  $\omega$ )*

$u$	$u$ (radians)	$\omega$ (steradians)	$y'$ (mm.)	$s$ (sq. mm.)
1'	0.00029	$6.65 \times 10^{-8}$	0.00485	$1.85 \times 10^{-5}$
5'	0.00145	$1.66 \times 10^{-6}$	0.0243	$4.62 \times 10^{-4}$
10'	0.00291	$6.65 \times 10^{-6}$	0.0485	$1.85 \times 10^{-3}$
30'	0.00873	$5.98 \times 10^{-5}$	0.146	$1.66 \times 10^{-2}$
1°	0.01745	$2.39 \times 10^{-4}$	0.291	$6.65 \times 10^{-2}$
2°	0.0349	$9.57 \times 10^{-4}$	0.582	$2.66 \times 10^{-1}$
5°	0.0873	$5.98 \times 10^{-3}$	1.46	1.66
10°	0.1745	$2.39 \times 10^{-2}$	2.91	6.65

**Retinal Heterogeneity.** It is unusual for the sensitive surface of a receiver to possess the same properties all over; with photographic plates or photoelectric cells, homogeneity is only obtained with great technical difficulty. In the case of the retina there is extreme heterogeneity; consequently when, for example, an image of a circular source of apparent diameter  $u$  is formed on the retina, it is not sufficient to specify  $u$  only; the point on the retina where the centre of the image falls must also be specified.

Vision has maximum acuity when the image falls on the *fovea*, the region of the retina which has its centre coincident with the image of the *point of fixation*, i.e. the point which the subject looks at fixedly. To project a source completely on the fovea, its apparent diameter  $u$  must be less than 1° and its centre must coincide with the point of fixation. Foveal vision has special characteristics which are not found in the surrounding parts of the retina known as the *extra-foveal* or *peripheral* retina. Even the properties of the peripheral retina are not constant throughout, but vary continuously as the *eccentricity*  $\eta$  increases, the eccentricity being the angle between the point of fixation and the point considered. As a first approximation these properties depend only on  $\eta$ , whether the image is formed above, below or on the nasal or temporal side of the retina; but to a closer approximation this is not true. In every case it is necessary to know, at least, the values of the two angles  $u$  and  $\eta$  in order to determine the characteristics of the part of the retina involved.