

TABLE II. Comparison of Effects of Single and Repeated Injections of 1 μ g of *E. coli* Lipopolysaccharide on Plasma Iron in the Rat.

No. and frequency of injections	Time since last inj. (hr)	No. of rats	Bound plasma iron (μ g %)
1 Sham*	16	39	238 $\pm$ 6†
1	16	15	82 $\pm$ 7
1	48	3	280 $\pm$ 46
1	72	3	217 $\pm$ 18
4 daily	16	6	235 $\pm$ 15

* One ml of pyrogen-free distilled water.

† Mean $\pm$ stand. error.

at injection sites where it would be absorbed slowly (8).

Summary. A single injection of as little as 0.1 μ g of lipopolysaccharide from bacteria produced a marked hypoferremia in the rat. A tolerance was developed with daily administration of the endotoxin.

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Effects of Exposure to Continuous Light on the Eye of the Growing Chick.* (26505)

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A peculiar eye abnormality observed in chicks exposed to continuous light during the first 6 weeks of life has been briefly described (1). This observation has been confirmed repeatedly, using several different breeds of chicks (2). Further work has been conducted on this abnormality to obtain information on the histological changes associated with the eye enlargement.

Day-old, male chicks were randomly placed in floor pens from which natural light was excluded. Incandescent bulbs were used to provide approximately 3-foot-candle intensity measured at bird height. The chicks were brooded under shielded electric brooders in the normal manner. Feed and water were supplied *ad libitum*.

One group of chicks was exposed to 12 hours light per day (controls) and another group received 24 hours light per day. The

birds exposed to 24 hours light per day invariably developed elongated eyelids, or a peculiar "slant eyed" condition. The cornea appeared to be less convex than in controls, with the iris closely associated with the inner surface of the cornea. Fig. 1 illustrates these effects.

Four birds, 2 from each treatment, were sacrificed at 10 weeks of age. The eyeballs were removed, trimmed of external musculature and weighed (Table I). The average weights agree with previous reports based on a much larger number of birds (1,2). The eyeballs were then fixed in Bouin's solution for 24 hours, cut in half with a razor blade and kept in fixative for 24 hours more. A comparison between 2 such longitudinally sectioned eyes (Fig. 2), shows flattening of the cornea and reduction in thickness of the eye wall. The most striking difference appears to be in size of the vitreous body. The hemispheres were embedded in paraffin, sec-

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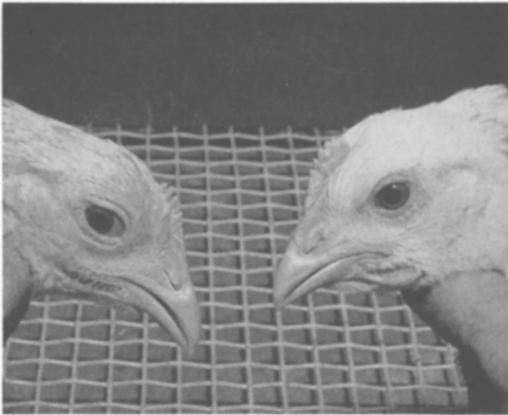


FIG. 1. Effect of continuous incandescent light (left) compared with 12 hr light/day (right) on appearance of eyes of chicks.

tioned at 10 μ , and examined histologically.

A distinct difference was noted in total thickness of the wall of the eye, as well as in the thickness of some of its layers. In some areas, the choroid appeared to be somewhat thinner in the eyes of birds exposed to

TABLE I. Influence of Light Exposure of Chicks on Size of Eyes.

Light exposure/day (hr)	Wt of eyes	
	g	As % of body wt
24	6.93	.456
12	5.21	.377

continuous light, the vessels being flattened and elongated when compared with those in the eyes of controls. Differences in thickness

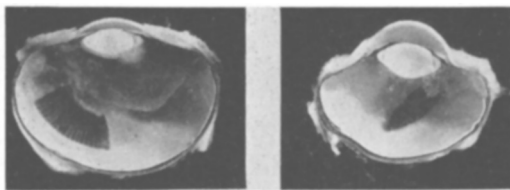


FIG. 2. Comparison of longitudinal sections of eyeballs from chicks exposed to continuous light (left) and to 12 hr light/day (right).

of the retina were most pronounced: the retina of the birds which received continuous light exposure was markedly thinner (Fig. 3). The thickness of the nerve fiber layer and the layer of rods and cones appeared to be greatly reduced in chicks exposed to continuous light. The pigmented layer, and the inner nuclear layer appeared to be slightly thicker in the experimental birds which had thinner retinas. No differences could be observed in the optic nerve or the pecten after staining with either hematoxylin and eosin or with Mason's trichrome method.

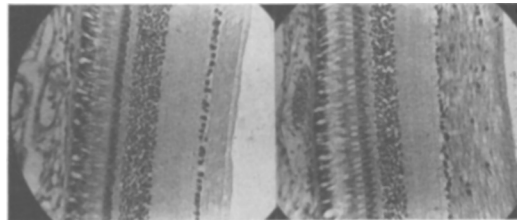


FIG. 3. Photomicrographs of retinas from chicks exposed to continuous light (left) and to 12 hr light/day (right). Mag. 115 $\times$.

Summary. The influence of continuous incandescent light on the eyes of young chicks has been investigated and a profound enlargement of the eyeball has been observed. The enlargement is associated with an accumulation of fluid in the vitreous body. Histological changes were evident in several layers of the eye with the most striking effect being a thinning of the retina. Exposure to continuous light reduced the thickness of the nerve fiber layer and the layer of rods and cones.

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