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Since E. Merker’s research had been done on the spectral limit to cause pigment migration of the compound eye of *Lepidoptera* (Moths and Butterflies), the other Orders of insect such as *Hymenoptera* (*Apis*) and *Diptera* (*Drosophila*) were also proved to be highly sensitive to the ultraviolet ray. The determinations of effective wave length of the former experiment were attained by observation with naked eye through monochromatized spectrum to the insect eye on single sample or on the attitude of phototropic conduct of insect.

The author’s process now described here will be new and convenient method to determine the effective wave length of spectrum on the eyes of several individuals in the same time.

The principle of this method is based on the fact that the retinular pigment of the dark adapted compound eyes of *Chilo simplex* moth retreat inwards when enlighten by the effective wave length, and the apparent colour of the eyes become greyish white instead of being dark, the same phenomena is quite common in the compound eye of nocturnal moths.

The author at first arranged several wingless moth one by one at side-wise on the surface of a slide glass tying with a gum tape (Fig. 1).

![Fig. 1](image-url)

Then their heads were protruded from the edge of the slide glass to subject the one side eye towards the spectrum. On the other hand the spectroscopic of Adam-Hilger’s E2 was set to project the bright line spectrum on the scale as being expected to be broad as just as the same width of a compound eye controlling the slit of light entrance. For the light source the mercury quartz lamp was used. After the preparation of experiment and the equipment had been completed, the dark adaptation of eyes were compelled in darkness within thirty minutes, the length of exposure of eyes to the spectrum were varied according to the means whether to get the wave of most effective or to know the extremes of spectrum.
The samples were subjected to the light in 3, 5, 10, 20, and 30, minutes respectively. In 3 to 5 minutes the colour of eyes changed at the region from 340 $\mu\mu$ to 365 $\mu\mu$ of wave length. In 10 to 30 minutes exposure the colour of eyes changed from the wave of 253 $\mu\mu$ to 675 $\mu\mu$ at each bright line region (Fig. 2).

![Fig. 2](image)

It must be noted here that the colour change of eyes was observed after the quick fixation of the whole samples in Carnoy’s solution at the end of exposure to the light dipping suddenly into the fixing agent in darkness.

After the operation we can clearly denote the degree of pigment migration individually under the microscope as shown in Fig. 3.

![Fig. 3](image)

From this experiment it is noticed that the eye of *Chilo* moth perceives the wave from 253 $\mu\mu$ to 675 $\mu\mu$, and is most sensitive at the region of wave of 355 $\mu\mu$.

**Literature referred.**