Photographing Internal Structures of Insects

Visualize a clock face in its normal vertical position. At the dial centre (X) place a shallow transparent trough containing the organs in fluid. Direct a light beam from 4 o'clock to pass through X and illuminate the organs. The camera is positioned at 2 o'clock with its lens focused on X.

Improvised Controlled Artificial Lighting

Visualizing the clock face once more, direct a projector beam from 9 o'clock through X where the insect is stationed to 3 o'clock, where a flat or parabolic reflector is placed to redirect the beam to X.

It is left to the artistic ability of the photographer or his desire to emphasize certain features as to how far from the subject the reflectors are placed in these examples.

Exposure Compensation

When the subject is closer to the camera than 10 times the focal length of the lens the exposure must be increased. For instance with a 4 inch lens any object less than 40 inches away requires additional exposure.

The corrected exposure is determined by the following method:

Multiply exposure time *as indicated by meter* by a *correction factor*.

The correction factor is $(M + 1)^2$ where M = magnification or reduction. To calculate M, measure the object and its image in the viewing screen, and divide the value for the object into that for the image. Example: with insect size and image size the same, write $(1 + 1)^2 = 4$. With a meter reading of 1/100 sec. at F 11, we have 1/100 × 4 = 1/25 sec. at F 11.

Following are the comparative F stop settings for this exposure giving a varying depth of focal field:

1/400 at F 2.8, i.e. the shallowest field of focus, 1/50 at F 8.

1/200 at F 4, 1/25 at F 11.

1/100 at F 5.6, 1/10 at F 16, i.e. the deepest field of focus.

Reference

Exposure Meter Manual. Photo Research Corporation, Hollywood, U.S.A.

SCIENTIFIC NOTE

An instance of chemical attraction of the ambrosia beetle, **Trypodendron lineatum** (Oliv.), is of enough interest to record. During December, 1957, a batch of home-made beer was prepared, using malt extract, sugar, bakers yeast, hops and gelatin. It was capped and held for about three months. After use, a few bottles were put in a basement, these still containing small amounts of liquid and settled material, possibly including living as well as dead yeast cells.

The following May, after the spring flight of the ambrosia beetles, it was noted that there were several dozen **Trypodendron** in the bottles. They had apparently entered the basement and crawled through the necks of the bottles and had drowned in the liquid residue. Four or five bottles had attracted and trapped an estimated 80 - 100 beetles.

Youbou is the site of a large sawmill and log booms are common on Cowichan Lake, close to the town. Although beetles may have been attracted to the general area by the floating logs or freshly sawn lumber, they have not been known to enter houses in numbers. It is assumed, therefore, that a strong attractant was produced in the beer residue, leading beetles, presumably at the time of their spring attack flight, to enter the basement, find the bottles and crawl inside them.

No other insects were found with the beetles, which were readily recognized as **T. lineatum.** The British Columbia Forest Products Company has carried out control operations against this species in recent years, and the species is familiar.

This observation is being placed on record as a result of the interest of J. A. Chapman and J. M. Kinghorn, Forest Entomology and Pathology Laboratory, Canada Department of Forestry, Victoria, B.C.

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