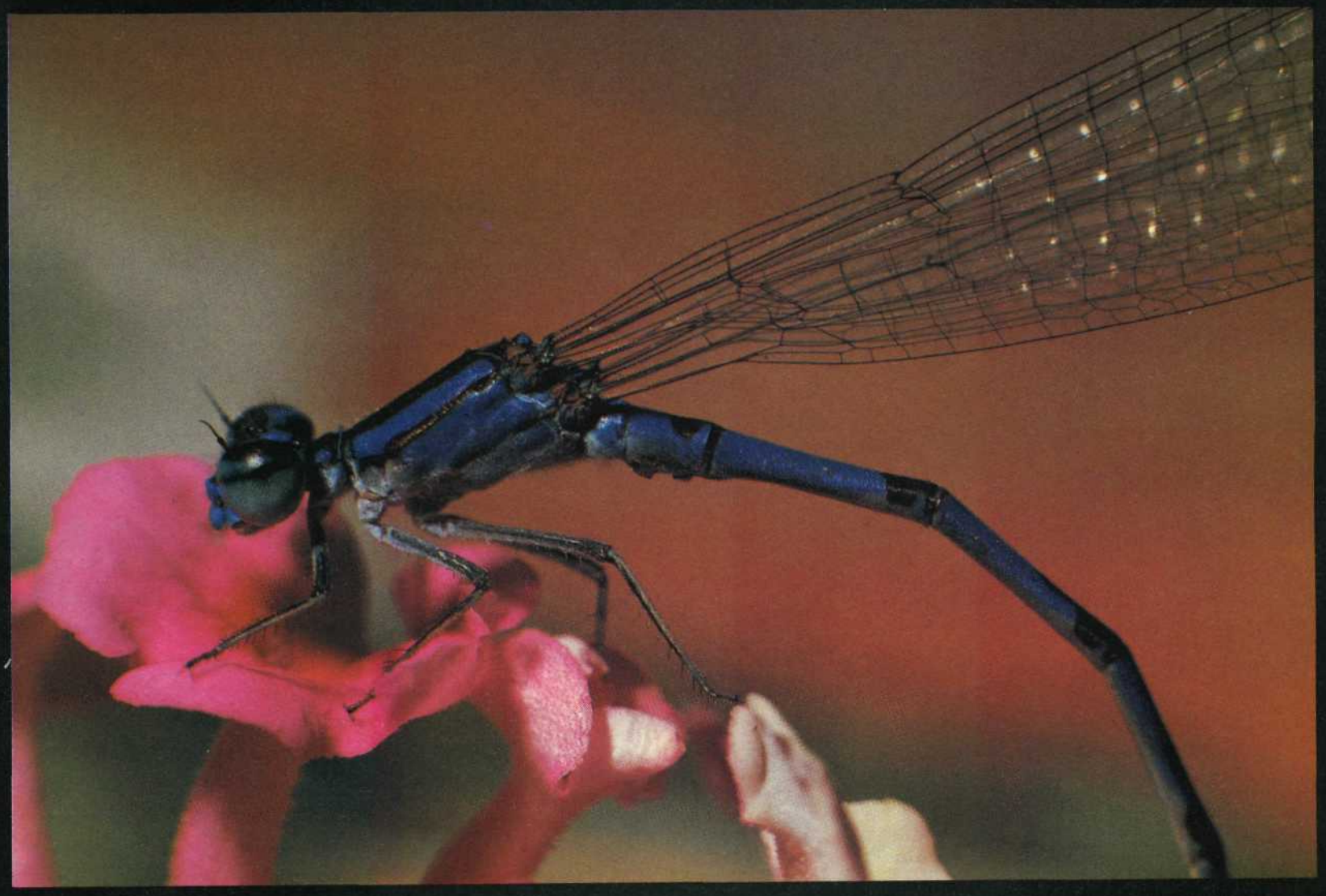

THE ART OF INSECT PHOTOGRAPHY

Get a bird's eye view of bugs-here's what you need...

To most people, insects are ugly creatures to be ignored at best. But, to insect photographers—or entomographers, as they are called—the one million species of Insecta that share this planet Earth with us offer fantastic varieties of color, shape, size and detail.

Insects are everywhere, and therefore offer a multitude of situations for amateur and professional photographers alike to experiment with and call into use an interesting variety of photographic equipment.

EQUIPMENT

The most common combination is the close-up lens, which attaches to the front of the camera's lens just like a filter. These lenses come with different magnification ranges and are called diopters: +1, +2, +4, and +10 are available. The +1 and +2 diopters allow the photographer to focus from three feet down to about one foot, and can encompass the insect in its surroundings. The +4 diopter concentrates on just the insect and a small part of its surroundings. The +10 diopter, sometimes called the life-size adapter, will give a 1:1 reproduction ratio of film to the subject, and allow for extreme close-ups. No exposure correction is necessary with close-up lenses. General cost is from $10–$30 each.

The second equipment combination involves extension tubes. These metal tubes are inserted between the camera and lens to give extreme magnification capabilities. Short extension tubes allow overall photos of the insect while the longer tubes help bring in close-up details of legs, heads, etc. Exposure compensation is necessary for extension tubes, and data sheets are usually included with these tubes. The general cost is from $30–$80.

The third equipment suggestion is the most expensive, but usually gives the best quality. A macro lens fits directly onto the camera in the same manner as the normal lens, yet allows close focus with no accessories. Exposure compensations are marked on the lens so that, as you focus closer, the exposure correction is given; but if your SLR has a through-the-lens meter or an autoexposure system built in, it will automatically compensate. Extension tubes can also be used with the macro lens for greater magnification. The general cost is $150–$400.

FILM SELECTION

Film selection for entomography is very critical. Fine grain and high resolution are the most important ingredients for film choice. Kodak Pana-

OPPOSITE PAGE: From Top Left to Bottom Right: Dragonfly, Dragonfly, Damselfly, Water Strider, Swallowtail Larvae and, finally, a Horse fly.

By Jack and Sue Drafahl

INSECT PHOTOGRAPHY

tomic-X, ISO 32/16°,has fine grain, high resolution and excellent contrast control, expecially when photographing dark insects in sunlight or with single flash. Kodak Technical Pan Film, with its higher contrast, has virtually no grain, extremely high resolution and can be rated at E.I. 64—see "Experiment with Kodak's Technical Pan Film, 2415" on page 40 of the March, 1982 issue of PhotoGraphic. If the lighting ratio can be kept low, Technical Pan film is your best choice. For color, Kodak Kodachrome 25 has the best color and resolution; but if a faster film is needed, then Kodak Ektachrome 64 would be the second choice.

LIGHTING

There are two basic light sources for live insect photography: the sun and electronic flash. Because of extreme magnification, depth of field, movement and high shutter speeds, tungsten lights are just not feasible.

If the sun is used as a light source, care must be taken to make sure that camera movement is restricted to avoid blurring images. As magnification of the subject is increased, so is every little movement. To maintain acceptable shutter speeds, f-stops in the midrange of the lens must be used.

Direct sunlight may also cause harsh shadows especially on dark insects. Adding a small fill card at the side of the lens will help fill in the shadows. Backlighting insects using the sun will also provide the photographer with a variety of dramatic silhouettes.

The electronic flash is by far the best light source for insect photography. It enables control of lighting direction, ratio and intensity, providing complete versatility. The electronic flash's high intensity allows the use of small apertures, creating the great depth of field needed for high-magnification photography. The short duration of the electronic flash also stops any camera or insect movement to create sharp photos.

There are two basic setups for electronic-flash entomography, the simplest being the single flash. It is best to move the flash from the top of the camera to either side of the lens. This can be accomplished with a small flash bracket mounted to the base of the camera. The addition of a fill card on the opposite side of the lens will soften the shadows.

The more-versatile second setup uses a second flash to replace the fill card, gives the best lighting control and provides the photographer with mixed lighting ratios. This flash should be of low intensity, so use a small flash, one with a variable-power control, or cover the flash tube with tissue paper. The second flash, or fill flash, can be moved to the side for sidelighting, top for top lighting and behind the insect for backlighting.

TESTING

The only accurate way to calculate exposure for macrophotography using one or two flash units is by testing. Most charts are correct in theory but not when it comes to practical use. Testing will include four variables: magnification, f-stop, flash distance and subject brightness. Two rolls of film will be needed for testing. First make exposures at all f-stops for each magnification. For this test it is important to keep the flash at the same distance from the subject as the camera. Evaluate exposures and mark the best one. Do not expect the exposures to change proportionally when you use different f-stops, because as you get closer, you must change exposure to correct for different lens extension, and also to compensate for reduced flash-to-subject distances.

To verify the validity of these tests, expose a second roll of film using these f-stops as a basis for each exposure. Photograph three subjects, light, normal and dark. Make three exposures of each. Shoot one at the normal exposure as determined in the first test; then one stop overexposed and one stop underexposed, for a total of nine exposures. Again evaluate your exposures and adjust final f-stops. The test results can be printed on a small business card or taped on the outside of each lens.

If autoflash is used, use the automatic setting that gives the highest f-number. Set your flash on automatic for the first roll of film; set the corresponding f-stop and bracket ±1 stop. Evaluate your exposures and then expose a second roll of film using light, normal and dark subjects. Bracket ±1 stop around the best exposure determined from the first test roll. Record your results and you are ready to go.

PREPARATION

Before starting on your insect safari, some research on insect behavior is in order. The more you know about an insect's life cycle, the easier it will be to find and document its various activities.

A short visit to the local library should furnish enough information regarding the habitats of various species, their life cycles, eating habits, as well as moulting, mating and migratory patterns. Equipped with this information and the macro gear, the entomographer is now ready to track down the most elusive of insects.

TECHNIQUE

The most important part of entomography is technique. A photographer can have the best macro lens, twin flashes and the finest film and still get poor insect photos.

When photographing any insect, it is best to get a variety of magnifications of the subject. First, an overall shot of the insect and its surroundings will show its environment. Next, get a full-length photo for identification purposes, followed by a ¾ shot to show the relationship of the insect's parts, and finally a close-up to show fine detail.

When shooting the full-length indentification shot, the plane of focus becomes very important. Carefully move the camera to the angle where the plane of focus is at the back edge of the insect's eye and runs through the front edge of its abdomen. This plane of focus will ensure a sharp head structure as well as fine detail of the rear leg structure and abdomen.

The critical element in the ¾-length shot of the insect is the head structure, as the remaining parts of the insect may gradually drift out of focus. This is accomplished by focusing on the highlights of the eyes. Most of the close-up detail shots will require moving the camera parallel to the surface being photographed.

Depth of field also plays an important part in the plane of focus. After the plane of focus is accomplished, stop down the lens until the impor-

1. Grasshopper photographed with double flash setup; note the double highlights in the eye.
2. Ladybug.