BIRD PHOTOGRAPHY BY SYNCHRONIZED FLASH ILLUMINATION

by Eliot Porter

Intermittently for many years I have practiced bird photography. When I began I photographed by guess, making no attempt to analyze the problems involved or to arrive at an intelligent solution of them. This lack of method was the rule among bird photographers. In part because they were primarily ornithologists, but largely because photographic technique had not been developed to its present day stage, little attempt was made to take bird pictures that even approached in nicety the standards of perfection and quality long attainable in other fields of photography. The obstacles to the production of bird photographs of an excellence comparable to those of any branch of photography are now no longer insurmountable.

In recent years I have become more interested in general photography than in the specialized field of bird photography. Because of this broadening of interest I have been able to view the narrower field in less distorted perspective and to see more clearly its possibilities. As a result I have laid down for my own guidance criteria of good bird photographs which I hoped to be able to fulfill. They are the following: first, the birds must be neither out of focus nor blurred by motion; second, they must be identifiable insofar as is possible within the limitations of black and white representation; third, all other

essential parts of the picture must also be in good focus and recognizable; fourth, pictorial standards of composition and execution must not be relaxed in the case of bird photographs.

Until the summer of 1937 I was satisfied with photographs in which the birds were, at least partially, in good focus. In most cases the environment, background and foreground, was a blurred, unrecognizable jumble. A picture of this sort is neither pleasant to look at nor particularly interesting, no matter what the subject, and the bird is rarely identifiable. This condition, however, was generally accepted as an unavoidable consequence of the limitations set by poor adaptation of the photographic technique to this purpose. Until recently there was a large measure of justification for this conclusion. Even with good natural lighting photographic materials were not of sufficient sensitivity to allow exposures of short duration at any but large lens apertures. In order to obtain a good picture with detail in all of its essential parts, especially of subjects close to the camera, the smallest lens stops must be used. With moving subjects, such as birds, this is very difficult. However, I found that even with the more active birds considerable improvement could be realized by operating at smaller apertures and slower shutter speeds. If one selects for exposure a moment when the bird is motionless, there is a good chance of obtaining a fair picture. I found it possible to use speeds between 1/25 and 1/10 seconds at f/11 to f/16. Of course if the bird moves, the picture is a failure and I obtained many failures.

The problem is reducible to the following terms: the only variables involved in the production of a photographic image through a refracting system are the intensity of light reaching the film, the time of its action and the spectral sensitivity of the film. The product of the first two gives the exposure and by their manipulation the desired kind of image is obtained. As pointed out above, increasing the intensity of light that reaches the film by increasing the lens aperture has great pictorial disadvantages although it does allow for shorter times of exposure. Increasing the illumination of the subject is, however, another way of shortening the exposure time. Since the development of foil filled flash bulbs the use of artificial illumination has become common practice in certain kinds of photography. Because of the intensity of the light, 60,000 lumen seconds for the new General Electric No. 21 bulbs, exposures can be made at very small apertures and high shutter speeds. The advantage gained from the use of these flash bulbs over even bright sunlight is very great. For example, at a given aperture shutter speeds 20 times faster can be used.

The third variable, film sensitivity, cannot be adjusted to any desired value. The manufacturers, however, produce films of many different speed ratings and spectral sensitivities. It is possible to increase somewhat film emulsion speeds by various chemical and physical treatments but the slight advantage is rarely worth the trouble.* Within

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* Treatment with mercury vapor increases film speed. A short pre-exposure or slight pre-fogging may reduce the latent period of the film in a subsequent full exposure.

recent months films have appeared on the market with emulsion speeds about four times greater than any previous film. These films are rated at 80 to 100 Weston.

By making use of these and other recent additions to photographic equipment it has been possible to obtain photographs of birds in which all essential parts of the picture are in very sharp focus and in which there is a minimum of blurring due to motion. A description of the procedure and an analysis of its advantages over older methods can now be presented. I shall describe the apparatus I use because I am most familiar with it and can best illustrate by it the points I consider important, but not because I think other equipment could not be used as successfully.

The only camera I have used is a 9 x 12 Cm. Linhof view camera equipped with an extra long bellows extension and an f/7 Zeiss double Protar lens in a Compur shutter. Focusing is done on a ground glass panel. The long bellows is necessary in order to get sufficiently close to the subject to obtain a reasonably large image. The Protar lens is slow but very well corrected. Large aperture lenses are neither necessary nor desirable for this technique. The shutter should be operable at a maximum speed of not less than 1/200 second. Other very useful but not necessary features are the swing back and rising and falling front. The shutter is fitted with a Kalart Micromatic flash bulb synchronizer which is adjusted so that on release the shutter operates at the brightest

part of the flash. There are several other makes of synchronizers on the market which should give equally satisfactory results. A trigger, attachable to the synchronizer and operable either electrically or mechanically, is necessary in order to make exposures at any desired distance from the camera. A mechanical trigger is illustrated in figure 4. A large reflector should be used with the flash bulbs and so placed to give as nearly as possible the effect of natural lighting. The camera, of course, must be mounted on a tripod.

By using the fastest panchromatic film, rated at 80 to 100 Weston, and the new foil filled bulbs such as the General Electric No. 21 placed two to three feet from the subject, very good negatives can be obtained at 1/200 second and f/45. Under natural conditions, assuming unobstructed bright, noon sunlight in June on an average colored, but not white, object, the light value will be about 200 Weston. The exposure on a film of emulsion speed of Weston 80 will then be 1/10 second at f/45. With the bellows of the camera extended for subjects three feet distant, there is considerable decrease in light gathering, necessitating increases of exposure by a factor of at least two or to 1/5 second at f/45. In flash photography this disadvantage, however, is largely compensated for by placing the flash bulb also close to the subject. Thus we see the very great advantage of flash light photography which permits, for a given aperture, a 20 to 40 times shortening of exposure time. With this

equipment there should be no difficulty in satisfying the first three criteria given at the beginning of this article. The fulfillment of the fourth criterion is rendered easier though it does not follow automatically but depends in large measure on the skill and artistic sense of the individual photographer.

There are other devices, which can be mentioned, useful for photographing some birds. I have used advantageously a large tripod, extensible to a maximum of fifteen feet, one leg of which is a ladder. It is quickly set up and saves a great deal of time when photographing birds that nest six to fifteen feet above the ground. For higher nests it may be necessary to erect a scaffolding. When this is done it is advisable to build a platform on which a tripod can be stood. A blind, though often necessary for large birds, can usually be dispensed with when photographing song birds. I have always found it simpler and easier to operate the flash and shutter by remote control.

The four pictures reproduced with this article were all made by the synchronized flash technique. For all the exposure was 1/200 second at f/45 on Eastman Super XX film (Weston 80) with one G. E. No. 21 bulb two to three feet from the subject.

Brown Creepers have rarely been photographed. This pair built their nest behind the bark to which they are clinging. It was about four feet from the ground. Although at first they were rather fearful of the strange equipment so near their nest they soon became

quite accustomed to having their pictures taken and were not frightened away by the flash. It was a simple matter, due to the relative flatness of the subject, to get every part of this picture in sharp focus.

The Black-throated-green Warblers were photographed from the large tripod, the nest being about ten feet above the ground. The female of this pair (the upper bird in the picture) was very much shyer than the male. She came to the nest seldom and was always greatly alarmed by the flash. Since with this subject it was necessary to obtain as great depth of field as possible, the swing-back feature of the Linhof camera was used to considerable advantage.

The Northern Parula Warbler's nest was about twenty-five feet above the ground. To photograph it, it was necessary to erect a scaffolding. Although these birds were so little afraid of either the camera or of me that it was not necessary to use remote control for photographing them, they almost always jumped so quickly at the flash that in many dozen pictures they were badly blurred even at 1/200 second shutter speed.

The Olive-backed Thrush, a relatively slow moving bird, offered no remarkable photographic problem for solution. The nest was about three feet from the ground and the setting was a particularly fortunate one. This picture fulfills satisfactorily all the criteria for good bird photography.

Aside from these pictures, during the last two summers I have photographed the following birds by the flash method: Acadian Chickadee, Downy Woodpecker, Flicker, Nothern Parula Warbler, Black and White Warbler, Redstart, Northern Yellow-throat, Savannah Sparrow, White-throated Sparrow, Red-eyed Vireo and Barn Swallow. The flash technique is not well adapted to photographing from a blind and, therefore, none of the birds for which a blind would be necessary are included in this list.

LEGENDS FOR REPRODUCTIONS

1) A pair of Brown Creepers at their nest.

2) Family of Black-throated-green Warblers.

3) Male Northern Parula Warbler at nest.

4) Olive-backed Thrush, nest and young.

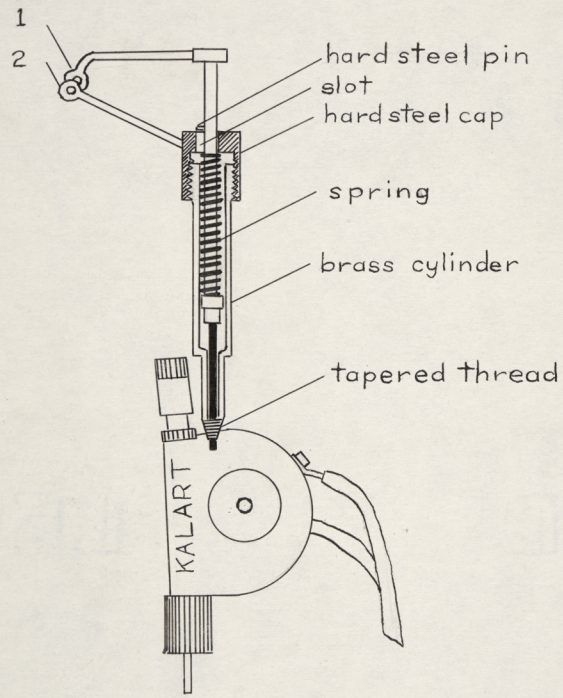


Fig. 1. Trigger operated by thread fastened to eye 1 and passed through eye 2.

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