

### Equipment for Bird Photography

#### CAMERA

4x5 view camera with swings  
2½x2½ motorized Hasselblad occasionally

#### LENSES

18.5 cm. Zeiss convertible Protar, f/7 (preferred lens)  
9 in. Goerz Artar, f/9  
6 in. Zeiss Tessar, f/4.5 (least preferred)

#### Shutters

Compur dial set )  
Ilex ) equipped with solenoid tripper  
Compur ring set )

#### Flash equipment

Custom made, high light output, 1000 watt-sec., consisting of three units which can be intercoupled for use together or singly

Custom made single unit with output of approx. 350 watt-sec. G.E. FT220 flash lamps. Three always used with either of above power packs.

6 volt automobile battery used for power supply

#### Photo-electric device

To obtain flight pictures of birds in various situations a very sensitive photo cell operating through a sophisticated circuit connected to the solenoid on the shutter is placed strategically so that the bird as it approaches its nest or other selected position will interrupt light activating the cell causing an electrical impulse to activate the solenoid.

The photo cell is activated either by sky light or a small flash light.

This device was designed by Crawford H. Greenewalt.

#### The Set-up

The camera is placed 30 to 48 inches from the subject depending on its size.

The flash lamps are arranged to give modeling as close to natural light as possible. One lamp is placed at the camera 30-36 inches from subject. The other two lamps are placed at the same distance, approximately, but at an elevation to the camera axis of 45-90 degrees, and at an azimuth to the axis of 45-90 degrees or sometimes greater depending on the reflectivity of the subject.

Apertures for the 1000 watt-sec. unit vary between f/40 and f/45. For the 350 watt-sec. unit between f/20 and f/32.

The flash duration of both units is approximately 1/4,500 sec.

#### Film

Ektachrome Daylight 4x5, ASA 50