A SIMPLE DEVICE FOR SHORT PHOTOGRAPHIC EXPOSURES[1]

IN connection with some recent experiments on the deposit of insecticidal sprays on surfaces it became necessary to photograph the formation of droplets of spray on the object. This requires a short exposure and therefore high intensity illumination. Instead of controlling shutter speed the duration of illumination

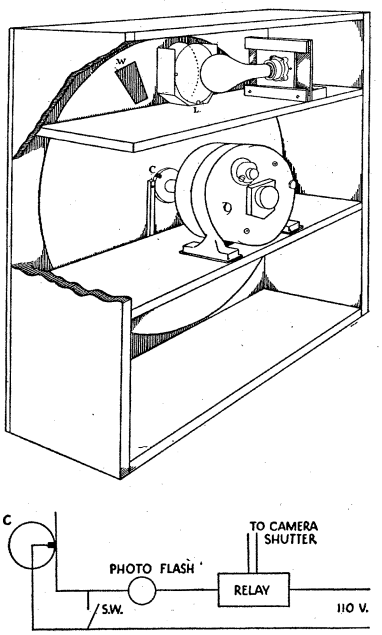

FIG. 1

was limited. The apparatus is shown in Fig. 1. A window, W, is cut in a sheet steel disk 2 feet in diameter directly fastened to the motor shaft. A window, not shown, is cut in the box so that it and the flash lamp and lens are in line. The window, W, thus serves as a shutter. If the speed of the motor is 1800 r.p.m., then one revolution requires 0.033 seconds and a window subtending 12° of arc will give a duration of illumination of 0.001 second. Since the maximum intensity from a photoflash bulb occurs about 0.01 seconds after firing, the commutator is set at 180° to 270° with respect to the window. Before the window has again passed the lamp the flash is over so that but a single exposure results. The number 20 size photoflash lamps give enough light to cover a square foot of surface.

The wiring diagram is self-explanatory. If desired, the relay may be dispensed with and the camera shutter operated by hand, using a one second time or "bulb" which permits of firing the light by switch during the exposure. The switch, S.W., is used when focussing the light on the object, an ordinary 100-watt lamp being substituted for the photoflash lamp.

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A SIMPLE LABORATORY-MADE BLAST LAMP

A SIMPLE flexible blast lamp may be easily constructed in a few minutes with material found in most laboratories. The outer jacket (A) may be made of 20 mm Pyrex tubing or a 20 mm Pyrex test-tube, to which is attached the side arm (B) for the gas intake.

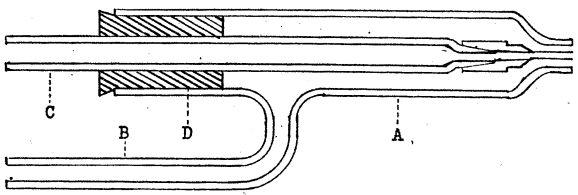

FIG. 1

The nozzle is then drawn out to about 3 mm inside diameter. The central tube (C) for oxygen supply is the barrel of a 1 cc tuberculin syringe, with the base flange removed. This is inserted through the cork (D). For the changeable oxygen tips, filed-off hypodermic needles are used. Thus by merely removing the syringe and cork, a needle may be slipped off and quickly replaced by another of a different size and the resulting flame may be varied from a fine point with a 20-gauge needle to a large lance flame with one of 13 gauge. The type of flame may also be varied from a point to a large "brush" annealing flame by slipping the syringe forward or back.

For very fine work, as quartz micro-manipulation needles, the nozzle may be drawn out to a finer opening and smaller tips used. The bend in the side arm makes the lamp convenient for use as a hand torch, while a ring stand and clamp make it a flexible bench type.

The only disadvantage to this blast lamp as described lies in the fact that both oxygen and gas must be regulated at the source. If desired, stop-cocks may be incorporated in the lamp itself.

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