A SIMPLE INSECTARY ARTIFICIAL LIGHT CONTROLLER [1]

H. W. FOWLER, JR., W. P. MURDOCH, H. R. BULLOCK, W. H. PARKER AND H. D. BAUMGARDNER

For experimentation and routine maintenance of established mosquito colonies it is often necessary to have an artificial lighting device in the insectary. Some colonized mosquito species, e.g., *Culex tritaeniorhynchus* Giles in Japan, require special lighting conditions during specific periods of the year. The colony of *C. tritaeniorhynchus* maintained by the 406th M.G.L., requires at least 12½ hours daily of natural or artificial light. At this latitude natural light (sunrise-sunset) falls below 12½ hours the latter part of September to the middle of April (1) and during this time it is necessary to supplement the natural light in the insectary with artificial light.

In 1956 an artificial light schedule was instituted in the 406th M.G.L. insectary (2), which simulated dawn and dusk light intensities recorded in the insectary during July and August. It consisted of a dawn period of 1 hour, a day period of 12½ hours, a dusk period of 1½ hours and a night period of 9 hours. Artificial light was manually regulated with a rheostat-controlled lamp in a manner similar to that described by Brennan and Harwood (3). This technique adequately simulated the dawn and dusk photoperiods required by the colony of *C. tritaeniorhynchus* but had the disadvantage of manual operation and necessarily required several hours of extra duty daily for laboratory personnel.

The artificial light controller (Figure 1) was designed to operate on a 24-hour cycle with two 3-hour periods of illumination. These periods simulate dawn and dusk photoperiods and are automatically controlled. The cycle starts at zero light intensity for the simulated dawn period and steadily increases in light intensity until normal daylight occurs. For the simulated dusk period the controller starts at maximum light intensity and steadily decreases to zero light intensity.

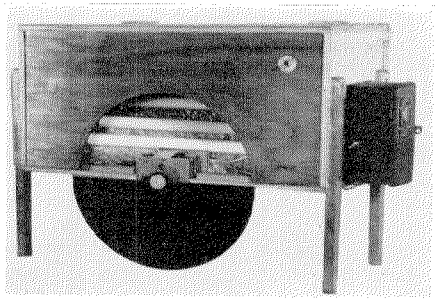

FIG. 1.—Artificial Light Controller.

Wiring and construction details are shown in Figure 2. The unit consists of a rectangular box 10" wide, 12½" high, and 23½" long, constructed from ⅜" plywood which stands 20½" high with its four supporting legs. The semicircular face plate opening is 13" in diameter, and the face plate shield is ⅛" black bakelite 14" in diameter. The face plate drive is composed of a model #301 Paragon timer modified by replacing the stock 3.5 rpm motor with a 15 rpm synchronous motor. This modification was necessary to change the original 24-hour cycle to the desired 6-hour cycle for the periods of illumination. The face plate shield is mounted on the drive shaft of the modified timer gear box. Illumination is provided by four 18", 15 watt, 110 volt AC fluorescent tubes with two reflectors, 13" x 22½" and 10" x 22½", of machine burnished sheet aluminum which are hinged together to facilitate installation. A model #305 M.B. Paragon timer is used for the automatic time control.

[1] Contribution of the Department of Entomology, 406th Medical General Laboratory, APO 343, San Francisco, California.

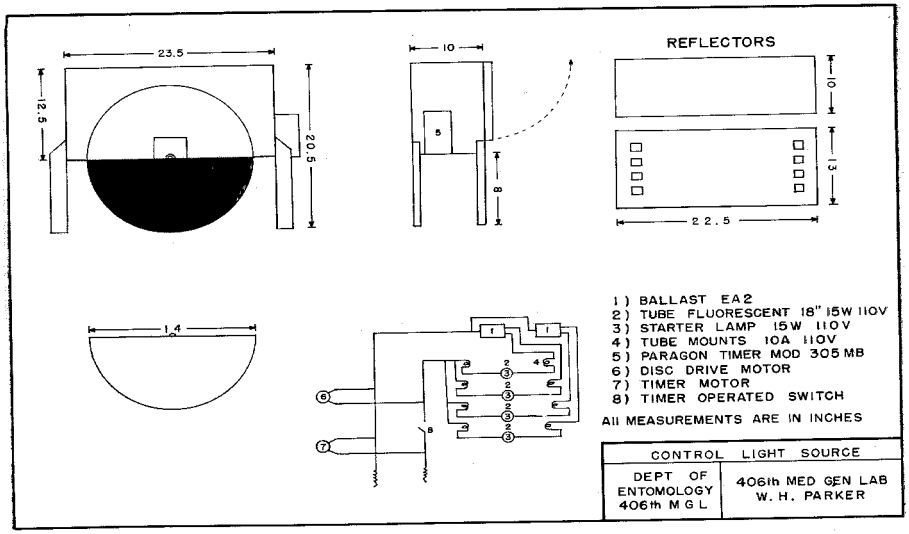

FIG. 2.—Diagram of Artificial Light Controller.

The controller is practically noiseless and does not interfere with mosquito mating activity. It was constructed from salvage parts and the total cost of assembling the unit was considerably less than 50 dollars.

SUMMARY. A simple insectary artificial light controller used to provide the special lighting conditions in the insectary required by a colony of *Culex tritaeniorhynchus* is described. It can easily be constructed from salvage materials found in most laboratories. The controller is designed to operate on a 24-hour cycle with two 3-hour periods of illumination. These periods simulate dawn and dusk photoperiods and are automatically controlled. The controller gives dependable service and eliminates the requirement for laboratory personnel to operate an artificial light schedule.

References

1. METEOROLOGICAL DATA: Toyko Weather Central, Hq., 1st Weather Wing, APO 925. 1956.

2. NEWSON, H. D., BLAKESLEE, T. E., TOSHIOKA, S., SAKAI, M., WHEELER, C. M., SHIMADA, T., and AKIYAMA, J.: A preliminary report on the laboratory colonization of the mosquito *Culex tritaeniorhynchus* Giles. Mosquito News, 16: 282–283, 1956.

3. BRENNAN, J. M. and HARWOOD, R. F.: A preliminary report of the laboratory colonization of *Culex tarsalis* Coquillett. Mosquito News 13 (2):153–157, 1953.

MASSACHUSETTS COMMISSION LOOKING FOR SUPERINTENDENT

The Bristol Co. Mosquito Control Project (Massachusetts) is looking for a Superintendent to head their program, which is just getting under way. Starting pay is $6000 per year and increases to around $8000. Interested persons should write to Curtis Peckham, Chairman, 190 South Walker Street, Taunton, Mass.