# Special Projects

## The Use Of An Eye-Color Mutation In Fly Dispersion Studies

Methods for marking insects to be used in flight-dispersion studies have utilized fluorescent dyes, colored adhesive dusts, and chemical agents which produce color reactions. Certain drawbacks have been encountered with each method. The fluorescent dyes require special ultraviolet lighting equipment for their identification. The colored adhesive dusts require special application techniques, since too heavy an application interferes with the normal flight of the test insects and too light an application is largely removed by the cleaning activities of the insects, by mechanical jarring during insect activity, and by environmental factors such as rain. The chemical reactions involve special handling and considerable time in view of the small percent of the total trap catches represented by the recaptured marked individuals.

In January 1948, 20 adults of the blow fly *Callitroga macellaria* with bright lemon-colored eyes instead of the dark brown eyes of the wild type were discovered in the insectary of the Technical Development Division of the Communicable Disease Center. This offered an opportunity for providing naturally-marked insects for flight dispersion studies. The individuals with the lemon-eye mutation were separated from the wild flies, and the eggs from 10 females were reared in separate containers. Although the lemon-eye characteristic is a recessive and therefore is not evidenced when these flies are crossed with the wild type, the separation of the first 10 male and 10 female lemon-eyed individuals had occurred before mating had taken place. All the offspring from the original mutants, therefore, had the lemon-eye characteristic.

It has been possible to maintain this characteristic through subsequent generations and to produce several thousand flies. These flies have been ideal for dispersion studies, as the lemon-eyed individuals can be readily sorted from all other flies in the trap catches without any special equipment, lighting, or chemicals. The color does not fade with the death of the fly, at least within the first few weeks that may be necessary for sorting, and is not influenced by either the insects' cleaning activities and flight, or by the environmental factors. Pre-release catches of wild flies have failed to show any lemon-eyed individuals in nature.

Specimens of this mutant type have been placed in the CDC collection in Atlanta, Ga., and in the U. S. National Museum in Washington, D. C.