

FROM FIELD AND STUDY

Cyanide Poisoning of Songbirds by Almonds.—On February 15, 1955, a call was received by the California Department of Fish and Game reporting that hundreds of birds were dead in a residence area in the Sacramento Valley. Ernest Clark investigated the locality that afternoon and picked up about fifty birds and a sample of the almonds on which they were feeding. The property is located in Citrus Heights, about fifteen miles east of Sacramento, and was an old almond orchard which had been built up to homes. However, many of the almond trees remain. Several hard shell almond trees (*Prunus amygdalis*) were on the property and unharvested almonds were on the lawn as well as in the trees. All the dead birds proved to be American Goldfinches (*Spinus tristis*), although Scrub Jays (*Aphelocoma coerulescens*) were also feeding on the nuts.

Mr. Clark checked the area again on February 16 and picked up birds. These were brought in and examined by the Department's Disease Laboratory in Berkeley, with negative results. On February 18, Macgregor checked the area and observed approximately fifty American Goldfinches feeding on the almonds. One male, while feeding on the lawn, went into convulsions and somersaulted over and over for about ten seconds, then spread his wings out in a final spasm and died. A few minutes later another male dropped from one of the trees onto the lawn. This bird was immobile, but his heart kept beating for three minutes before stopping.

Assistance and advice were sought from Dr. Stuart A. Peoples of the University of California at Davis. Dr. Peoples' analysis of several of the partly eaten almonds showed that they had a cyanide content of approximately 0.2 milligrams per nut. He suggested that we take some amylnitrite and administer it to some of the birds just after they fell. This was done by placing a drop or two on a cloth and holding it next to the nostrils of the stricken bird for about twenty seconds. The effect of this was spectacular, for when so treated, the apparently lifeless bird came to, shook its head, and after about three minutes regained its equilibrium and was able to fly again.

One bird so treated was held for observation. It vomited bits of almond but was in good condition for 24 hours. It died the following afternoon, but this probably was due to conditions of captivity rather than the poison. The amylnitrite is a specific antidote for cyanide poison and reacts with the cyanide, neutralizing it so that it can be removed from the system.

Auld in 1908 (*Jour. Chem. Soc. (London) Trans.*, 93:1251-1280) has shown that amygdalin and an emulsion are coexistent in the seeds of almonds and when water is added the emulsion hydrolyzes the amygdalin, forming benzaldehyde, hydrocyanic acid, and dextrose: $C_{20}H_{27}ON + 2 H_2O \rightarrow C_6H_5CHO + HCN + 2 C_6H_{12}O_6$. This is evidently the reaction which took place at the Citrus Heights location. This is an unusual situation because normally the nuts would have been harvested and not available to the birds.

Ross Waggoner of the Department investigated a situation at an almond shelling plant near Yuba City, California. He reported that 3000-5000 dead birds, mostly goldfinches and some House Finches (*Carpodacus mexicanus*), were found in the vicinity of a pile of almond shells. These almond shells had been there all winter, but recently the top layer of almonds had been removed, thus exposing unweathered shells. Small bits of almond meat adhered to the shells and the birds were feeding on this almond meat. A rain occurred on February 14, and this evidently provided the water for the hydrolysis. Almost all of the birds died during a 48-hour period following the rain.

In all the years this plant has been in operation this is the first time there has been an incident of this nature. Although no analysis of the nuts was made, it seems probable that the birds were being poisoned by hydrocyanic acid in the same way as those at Citrus Heights.—WALLACE G. MACGREGOR, *California State Department of Fish and Game, Sacramento, California, March 28, 1955.*

The Rufescent Mourner in Chiapas, Mexico.—The Rufescent Mourner (*Laniocera rufescens*) apparently has not been found heretofore north of Guatemala. During late April of 1955 while collecting in the jungles known as El Ocote, some fifty kilometers northwest of the town of Ocozacoautla, Chiapas, I collected four specimens of this species at an altitude of 2000 feet. At this locality I found