depth; instead of forming circles, the birds present compact spearhead and wedge formations and sweep the bottom muck with the characteristic back and forth side movements of their long bills. As many as 13,000 Avocets have been observed taking part in such coöperative feeding projects. The operations may frequently be observed during the flocking period following the time when the young of the year are full grown.

The coöperative feeding of most, and possibly of all birds is probably incidental or accidental as birds are attracted to areas where feed is available and presence of one bird feeding usually attracts others.—CLARENCE COTTAM, C. S. WILLIAMS, AND CLARENCE A. SOOTER, *U. S. Fish and Wildlife Service, Washington, D. C.*

Goldfinch and Field Sparrow rifle small galls.—Watching Eastern Goldfinches (*Spinus tristis tristis*) forage over the twigs of bare white oaks on several days early in the spring of 1939, the writer was struck by the fact that, although the birds seemed to be attacking buds—they worked chiefly at the tips of the twigs, where buds were visible, and occasionally a fragment suggesting a scale dropped down—it never was possible to see a bud disappear. Because of the height at which the feeding was done, none of the particular twigs the Goldfinches visited could be examined. During the same period, however, Eastern Field Sparrows (*Spizella pusilla pusilla*) were noticed feeding, with the same appearance of budding, on white-oak saplings only a few feet tall. One of the twigs these had worked on was inspected, with the result that every leaf-bud on it was found to be intact, but among the cluster of terminal buds, and at the bases of some of these and of lateral buds, there proved to be a scattering of thin-shelled brown galls from a sixteenth to an eighth of an inch in diameter, some of which had been freshly torn wide open and were empty. The other saplings in which the Field Sparrows had worked were then examined; on those, too, the buds were intact but more rifled galls were found.

Plainly, the sparrows had not been budding, but opening the galls. This discovery suggested that the Goldfinches, too, had been doing that; in three different mixed woods they had fed exclusively in white oaks; the galls' positions again would account for the appearance of budding, and their small size for their invisibility. In the spring of 1940, this conjecture was circumstantially confirmed: the Goldfinches were found to feed longest in the trees most heavily infested with galls, and although it again was impossible to examine the particular twigs they visited while under observation, rifled galls were found elsewhere on the same trees.

Through the interest of Dr. Harry C. Oberholser of the U. S. Biological Survey, and Mr. C. F. W. Muesebeck, in charge of the Division of Insect Identification of the Bureau of Entomology and Plant Quarantine, specimen galls and an adult fly obtained from one were identified by Mr. Lewis H. Weld of East Falls Church, Virginia, as *Neuroterus vesicula* (Bassett), a gall-maker peculiar to the white-oak group. The insect, incidentally, Mr. Weld states, appears to be of no economic significance. Circumstantial evidence much like that in the case of the Goldfinch indicated that Field Sparrows also attacked the galls again in 1940, so that the habit appears to be a regular one of both species.

The galls' contents are taken at all stages of development—larva, pupa and adult. Of the two birds under discussion, the Goldfinches are the more assiduous hunters; flocks numbering up to twenty have searched the trees closely to heights of fifty and sixty feet and ferreted out even one type of the gall which, instead of growing out unprotected, displaces the heart of a bud and itself springs up partly enwrapped by the scales. The Field Sparrow rifling so far seen has been done by

only a few birds at a time and to heights of only about eight feet. In 1939, when spring was early, this activity was noted from March 26 to April 20; in 1940, when spring was late, from April 18 to 28. All of the observations were made in Baltimore.—HERVEY BRACKBILL, *3201 Carlisle Ave., Baltimore, Maryland.*

Crows feeding on larval amphibians.—Seven miles east of Ithaca, New York, a wooded tract locally known as Ringwood, supports several small ponds, some of which are temporary, drying up in midsummer. In the spring great numbers of newts (*Triturus viridescens*), spotted salamanders (*Ambystoma maculatum*) and wood frogs (*Rana sylvatica*), repair to these ponds to breed.

On July 8, 1941, I visited one of these ponds (Eubranchipus Pond) for the purpose of collecting larval *Ambystoma*. While the pond covers nearly half an acre and has an average depth of two feet or more in April, at this time all of the pond had dried up except for an area of approximately twenty square feet, in which the water averaged a depth of one inch. Several thousand larval *Ambystoma* and *Rana sylvatica* were stranded here. As I approached the pool, five Crows (*Corvus brachyrhynchos*) and a Red-shouldered Hawk (*Buteo lineatus*) flew off. These birds were ostensibly feeding on the stranded amphibians, but no positive evidence of predation was secured at this time.

The following morning I returned to the pond at an early hour. Because of dense shrubs and trees surrounding the pond, it was possible to make a close approach, and I observed that four Crows were either feeding on what appeared to be larval salamanders, or else sitting quietly above the now almost-dry pool on exposed logs. From the numerous white splashes of fresh excrement on adjacent logs, it was obvious that these birds had been repairing to the pool for several days. Several fecal samples were secured.

At 2 p.m. on July 10, I returned to the pond prepared to collect specimens of these Crows. At this time the pool had completely dried up, only the thick carpet of leaves remaining sufficiently damp to maintain life in several hundred of the amphibians. At this time five Crows were roosting on nearby perches. One had apparently just fed, as it was vigorously wiping its bill on the perch. I was fortunate to collect this individual. Examination of the gizzard of this specimen proved conclusively that it had been feeding upon the larval amphibians. The remains of three *Ambystoma* larvae, approximately 40–50 mm. in length, and the partly digested remains of a wood-frog tadpole, about 30 mm. long, were removed from the gizzard. In addition to these larvae, the following items were identified from the gizzard: three pits of cultivated cherries; 41 pits of pin cherry, *Prunus pennsylvanica;* 9 pits of the alternate-leaved dogwood, *Cornus alternifolia;* numerous seeds of the blueberry, *Vaccinium pennsylvanicum;* and a few seeds of the red raspberry, *Rubus idaeus;* a single carabid beetle and a quantity of mud and fragments of leaves, probably ingested inadvertently while feeding upon the amphibians.

The following items were identified from three sizable fecal samples: several dozen *Vaccinium* seeds, part of the skin of a lepidopterous larva, the head of a hemipteran, elytra from an undetermined beetle and several small bones which appear to be the leg bones of a larval *Ambystoma.*

The Crows appeared to be making good use of the unhappy situation of the salamanders and tadpoles. It appears probable that relatively few of the remaining amphibians were overlooked by these avian predators. Even though poison skin glands are well developed in the amphibian larva, they must hold little fear for the Crow.—W. J. HAMILTON, JR., *Cornell University, Ithaca, New York.*