

Within one week after hatching, the gosling proved itself imprinted onto humans, the following-reaction being readily elicited. It did not appear to discriminate between different individuals, however, this ability not appearing until it was more than four weeks of age. The chick, in the meantime, had become imprinted upon the gosling, following it, "cheeping" loudly when prevented from following, and fluttering excitedly towards the gosling upon the latter's return after an absence. Initially, the goose showed no overt response to this behavior of the chick, but by the middle of the second week it was apparent that the goose was reluctant to leave its pen to follow its human *Kumpan* unless the chick was permitted to accompany it. The gosling clearly showed ambivalence, following, stopping when the chick's "peeps" reached a crescendo, oftentimes returning to the chick, then following again. By starting the gosling off at a run or very rapid walk, this ambivalence could be overcome. Apparently, the inertia of a more rapid movement overcame the attraction of the chick's distress calls.

At this time, it was noted that the chick was adopting many of the behavioral traits of the goose. When the goose was treated to a handful of freshly cut grass, the chick would join it in pulling the grass from the observer's hands, eating it as eagerly as its Anserine partner. At first, the chick's efforts to manipulate large blades of grass were rather ridiculous, but it soon achieved considerable skill. In addition, the vocalizations of the chick began differing radically from what they had been earlier and from those of normally-reared chicks. Ordinarily, even when reared in isolation, the conversational sounds of chicks when feeding consist of a series of rather short, discrete "pips." In contrast, young goslings emit much softer notes which are run together to a much greater degree. The tone-quality of the chick's voice was not greatly altered, but the phraseology and modulation were clearly that of the gosling. (A tape recording has been made.)

This chick has not, it may be noted, progressed to the stage where it voluntarily will join the gosling in the latter's swim-tub. Regularly, however, it would perch on the rim of the tub while the gosling took its daily ablutions. Dr. Dillon Ripley has observed a hen-mother in the water with her foster brood of goslings.

Such a modification of normal patterns as that shown by the chick underscores the importance of social interaction as a determinant of behavior.—PETER H. KLOPPER, *Osborn Zoological Laboratory, Yale University, New Haven, Connecticut, July 8, 1955.*

Changes in English Sparrow population densities.—The English (or House) Sparrow (*Passer domesticus*) in general is associated with man and his works. When the English Sparrow was introduced and established in North America, the densest populations developed in the cities where human populations were densest. There, horses used for transportation supplied an abundance of waste grain for the sparrows to eat. With the replacement of horse-drawn transport by motor-transportation there was a decrease in the density of sparrow populations in the cities. (See especially Chapman, 1936. "Handbook of Birds of Eastern North America," p. 480, and Taverner, 1939. *Can. Field-Nat.*, 53:99.) Such a decrease is even now taking place in London (Fisher, 1954. "A History of Birds," p. 165).

A similar decrease in sparrow population has presumably taken place in Chicago. The magnitude of the decrease in the horse population is indicated by data from T. Carulin, writing in the Chicago Daily Tribune of May 26, 1955: In 1890 there were 101,566 horses brought into the city for sale; in 1931 there were 4,009 licensed horse-drawn vehicles; in 1955 it is estimated that there are 500 horses, including riding horses, in the stock yards and various stables, and only 52 licensed horse-drawn vehicles.

In the Chicago area there are now no English Sparrows in the heart of the city, where I have crossed part of the "Loop" twice a day for much of the past seven years, on my way to and from the Museum. There are sparrows on adjacent Michigan Avenue with its park, and there are sparrows on the city's south side, where the buildings are spaced out and there are trees and bits of gardens. But I've seen none in the downtown business section. Presumably they used to be there in abundance, feeding on the refuse from the horses that moved so much of the city's traffic at an earlier period.

It is not that there is no food available in the "Loop," for Domestic Pigeons (*Columba livia*) thrive there. About the La Salle Station there is often a flock of more than 100 pigeons, and probably several hundred of them live within two or three blocks of the station. These get their food in part from grain put out for them by bird-lovers; in part from cadging peanuts from passengers on the elevated train stations, and in part from foraging for scraps along the streets and amongst the garbage in the alleys. But evidently what is satisfactory for the pigeons is not for the sparrows.

In the Chicago area I know the sparrow populations are denser in the suburbs and out-lying towns, but densest about the stock farms where hogs are being fed on special, ground-grain food. In the summer the sparrows spread out, some even visit the picnic areas on the Lake Michigan shores; in late summer the grain fields attract them in numbers. But in winter they withdraw to the human communities, to farm buildings, and most of all to farms where hogs are fed. At such hog-feeding places I've seen flocks of hundreds on a winter afternoon.

Some ecology textbooks correlated densities of House Sparrow populations at an earlier period directly with the density of human population, though they might have more pertinently correlated it with the density of the populations of the domestic horse. Fisher has already pointed out that the House Sparrow is not so much a parasite of man as an associate of domestic beasts, especially of horses, and Hausman (1946. "Field Book of Eastern Birds," p. 544) gives its habitat as the edge of cities, etc., especially where chaff, chicken feed, and similar foods are available.

The correlation of population densities is probably best put somewhat as follows: English Sparrow densities correlate directly with the densities of certain domestic animals, the species varying from time to time and from place to place. Earlier the densest sparrow populations were correlated with the densest populations of horses; presently they are correlated in the Chicago area with the densest hog populations, while in New Jersey they seem to be coincident with the densest domestic fowl populations. Perhaps in other areas, other correlations will emerge.—A. L. RAND, *Chicago Natural History Museum, Chicago 5, Illinois, May 5, 1955.*

Behavior of a Ring-necked Pheasant on a Prairie Chicken booming ground.—A thorough review of galliform hybrids was compiled by Peterle (1951. *Wilson Bull.*, 63:219), who pointed out the importance of similar habitat and behavior in hybridization. Lincoln (1950. *Wilson Bull.*, 62:210) reported a hybrid between the Ring-necked Pheasant (*Phasianus colchicus*) and Prairie Chicken (*Tympanuchus cupido*), but he offered no theories as to how it might have occurred. In May, 1954, I had occasion to observe how hybridization between these species might possibly occur in the field. The opportunity was afforded while I was in a blind, observing Prairie Chickens on a booming ground in Section 20, T23N, R5W, Missaukee County, Michigan. The surrounding area either is under cultivation or is grazed by sheep or cattle. There is a fairly dense pheasant population in the area.

I was in the blind on May 12 at 4:30 a.m. The weather was cloudy and foggy,