

and right lenses of a single bird, except that 11 of these 51 points represent a single lens weight, as the contralateral lenses of these 11 were lost before they could be weighed. Lens weight increased noticeably in sparrows between the ages of six days (the youngest bird in the sample) and two months. Any increase that may have occurred in average lens weight after two months was insignificant compared with the difference between individuals. The average dry weight of the lens of 45 fully ossified, adult House Sparrows in milligrams was  $6.170 \pm 1.484$ , 95 per cent confidence limits. No difference in dry lens weight was apparent between males and females. When the data were tested by the t-test, the probability was greater than 0.50 that the mean lens weight of sparrows between two and six months of age was not significantly different from the mean lens weights of adults. These results show that lens weight is useless in aging House Sparrows older than two months.

The accuracy of the measurements as well as the reliability of the lens technique may be expressed by comparing weights of both lenses from the same bird. In 74 of the total of 96 birds, both the left and right lenses were weighed. One would expect the lenses from any one bird to have the same weight, but the left and right lenses differed in weight an average of 4.11 per cent of the mean dry weight of adult lenses, expressed in milligrams as  $0.253 \pm 0.059$ , 95 per cent confidence limits.

The lens technique appears to be of little use also in aging other species of birds. Dr. R. D. Lord (*in litt.*) found individual variation in lens weights to be so great that the lens technique was of no use in aging Ring-necked Pheasants (*Phasianus colchicus*). Howard Campbell (*in litt.*) found that Scaled Quail (*Callipepla squamata*) could not be separated by the lens technique in the fall into birds of the year and full adults. Miss Lois I. Bear (*in litt.*) also found overlap and little further increase in lens weight in Redwinged Blackbirds (*Agelaius phoeniceus*) by the time the birds had attained the age of the postjuvinal molt.

Although the eye lenses of cottontail rabbits continue to add significant lens material for nearly three years, the eye lenses of House Sparrows reach adult size when the birds are two months old. This difference in growth rate may be related to differences in the life histories of mammals and birds. Sparrows are fledged at an earlier age than that when rabbits leave the burrow, and they consequently have to possess well-developed sense organs to find food and avoid predators at an earlier age. In addition, birds in general are more dependent on a visual sense, whereas small mammals depend more on other sensory modes, such as smell and touch. The more rapid growth of the avian lens may be thought of as reflecting natural selection for early development of the eye as the sensory receptor for the primary sensory mode.

I would like to thank A. E. Aronoff, L. Case, H. Cogswell, F. B. Gill, J. P. Rood, M. Marsh, C. G. Thompson, and L. L. Wolf for helping me collect House Sparrows. For the use of equipment I am indebted to the University of Michigan Museum of Zoology, the University of Michigan Biological Station, and the Museum of Vertebrate Zoology. I am grateful to Dr. A. H. Miller, Dr. R. W. Storer, and Dr. H. B. Tordoff for their suggestions in the course of this work.—ROBERT B. PAYNE, *Museum of Vertebrate Zoology, Berkeley, California, January 26, 1960.*

**Malaspina's Early California Ornithological Report.**—Attention recently has been focused on the scientific investigation conducted at Monterey, California, in September, 1791, by Captain Alejandro Malaspina. The history of this investigation has been most interestingly and factually reported in a book by Donald C. Cutter, entitled "Malaspina in California," published by John Howell-Books, San Francisco, California, 1960.

Ornithologists will be especially interested in the section on Cardero's Birds of California. The only colored plates in the book are four paintings of birds done by the expedition's artist Jose Cardero. The author writes "Of the art emanating from California it is possible to identify definitely or provisionally some twelve items produced by ex-boatswain Jose Cardero." The four birds illustrated in color are the Redwinged Blackbird (*Agelaius phoeniceus*), the Red-shafted Flicker (*Colaptes cafer*), the California Thrasher (*Toxostoma redivivum*) and the California Quail (*Lophortyx californicus*). This is the second known drawing of the state bird. The California Quail was first done in black and white by a member of the La Perouse group in September 1786. The third representation of the California Quail was done by a member of the Bodega Expedition of the Limits, about a year after Cardero's illustration.

This note is published to draw attention to an additional item in the bibliography of early California ornithology.—C. V. DUFF, *Los Angeles, California, February 4, 1961.*