described pattern of fine lines, but rather the heavier slash marks of the Bank Swallow's bill.

In either case, it is evident that Cliff Swallows modified the pre-existing structure. More important, the initial modification was subtractive, requiring some form of earth removal. Jugs were completed for only those cavities occupied by mated pairs.

Breeding success for the two types of nests was distinct. Whereas most of the sealed tunnels fledged young, several of the partial jugs and jugs sealing large cavities were destroyed by heavy rains on 11 and 12 July. Although none of the destroyed nests was found to contain nesting material, a smashed egg was found beneath one. The presence of eggshells beneath sealed tunnels with nests indicated hatching took place in these on 13 and 14 July.

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An instance of "white wing-barring" in the Common Crow.—On 2 October 1965, near Rockville, Montgomery County, Maryland, two Common Crows (*Corvus brachyrhynchos*) with white wing markings were seen flying together by Mr. James F. Dawe, who secured one of them. The specimen (USNM No. 481596) was prepared as a study skin; one wing was removed, spread, and prepared separately. Unfortunately, determination of its sex was impossible because the carcass was eviscerated by the collector.

The specimen is a bird of the year as indicated by its worn primaries and rounded, rather than truncate outer rectrices (Emlen, 1936. *Condor*, 38:99–102). Except for white in the remiges of both its wings, it is normal in color throughout. White occurs mainly on the inner vane of primaries 1 to 9 and secondaries 1 to 8; the outer vane of primaries 5 to 8 exhibits some white toward the base of the feathers along the rhachis (Fig. 1). There is little relative difference in the size of the white area of the various remiges, although the streak of the inner primaries (1 to 3) and outer secondaries (1 to 4) is proportionally longer than in other remiges. The overall pattern of white in the wing is that of an interrupted broad bar or patch, which is visible only when the wing is spread (Fig. 1). This would have rendered the patch conspicuous in flight, but not when the bird was at rest.

The occurrence of white bars or patches on the wings of various European corvids (especially *Corvus corone* and *C. monedula*) has been abundantly reported by British authors (see literature cited by J. M. Harrison, 1957. *Bull. British Ornith. Club*, 77:84–85, and ibid., 131–133). Although albino or partly albino Common Crows (*Corvus brachyrhynchos*) are not rare (see Gross, in Bent, 1946. *U.S. Natl. Mus. Bull.*, 191:235–236), we have found only one record (Warne, 1926. *Bird-Lore*, 28:110–116) of a crow with the white restricted to broad wing-bars or patches. Harrison (loc. cit., 131–133) suggested that this phenomenon is of evolutionary significance, and stated (loc. cit., p. 85) that the pattern "must of course be genetic and pied patterned genes must have come from somewhere in the long evolutionary ancestral history of the corvine forms." He further suggested that study of variant corvids "may well one day disclose important contributory evidence of their evolutionary history." As he noted, patterns involving white wing markings occur in a number of corvid genera, although only *Cyanopica, Dendrocitta, Podoces* and, especially, *Pica*, exhibit patterns very similar to that of the aberrant *Corvus brachyrhynchos* discussed herein. It seems logical that if these effects are indeed genetic, then recurrent mutation (possibly enhanced by inbreeding in local

FIG. 1. Left wing of Common Crow (USNM No. 481596) showing white markings in the primaries and secondaries.

colonies, as J. M. Harrison suggested) may be responsible for the occasional occurrence of individuals exhibiting an ancestral wing-barring condition.

There is some doubt concerning genetic control of wing-barring in these variants. C. J. O. Harrison (1963. *Bull. British Ornith. Club*, 83:41–50) has discussed the relation of certain abnormal plumage features of corvids to periods of unsatisfactory or insufficient diet; under these conditions melanin may not be produced in growing feathers, resulting in the production of unpigmented (white) bars. The white wing markings of the *Corvus brachyrhynchos* specimen we studied are much broader than the narrow bars caused by dietary factors, if such bars are always like those figured by C. J. O. Harrison (loc. cit., p. 45). Sage (1964. *Bull. British Ornith. Club*, 84:25–30) strongly argues that symmetrical, broad wing-bars are indeed genetically caused. However, Warne's (loc. cit.) captive Common Crow was entirely black for five years, and only then did white wing markings begin to develop. These gradually increased in size until the wings were "about half white" (loc. cit., p. 116), although Warne gave no indication of the length of time this involved. This observation suggests that at least some instances of wing-barring may be attributable to nongenetic causes. Proof of dietary influence on development of symmetrical white wing-bars was provided by Fritz, Hooper, Halpin, and Moore (1946. *Jour. Nutrition*, 31:387–396; cited by Sage, loc. cit., p. 27), who demonstrated that a diet deficient in lysine caused symmetrical white wing-bars to appear in bronze-wing turkey poults. Further study is needed to determine the cause of this phenomenon in these corvids.

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