New York, has kindly acted as intermediary for me in contacting Mrs. Signa Bullock, daughter-in-law of the late Charles Bullock, collector of the pigeons. Mr. Robinson reports that "Charles Bullock for many years had the mounted birds in his home in the Town of Ohio, Herkimer County. Shortly after the death of Mr. Bullock the birds were sent to Ward's Natural Science Establishment . . . I do know that in the memory of some of the older residents in the Town of Ohio, Passenger Pigeons were very plentiful and were killed in great numbers."

Although the definite data concerning these specimens of historic interest are rather meager, it seems worth while to record their current whereabouts and as much reliable information as can be ascertained concerning them.—DAYTON STONER.—*New York State Museum, Albany, New York.*

Possible intergrades between the Myrtle and Audubon's Warbler.—While engaged in wildlife research in Rocky Mountain National Park, Colorado, I had opportunity to study and collect specimens of the birds inhabiting the park. On May 2, 1940, I observed an adult male warbler that sang the typical song of *Dendroica coronata*, and was apparently identical with the normal Myrtle in plumage, except for a conspicuous yellow area on the throat. I collected the bird, which is now in the Park Collection. During the following week, I saw several more of these aberrant warblers, all of which sang exactly like normal Myrtles. They were with flocks of typical Myrtles, sometimes accompanied by Audubon's Warblers. Two or three similar skins are in the collection of the Colorado Museum of Natural History, all taken in Colorado. There is a single skin in the American Museum of Natural History, no. 381799, labelled *D. auduboni*, which is a characteristic Myrtle Warbler, except that the fore half of the throat is bright lemon; the rest of the throat, ashy-white. This bird was collected April 6, 1904, at Witch Creek, California.

It is possible that these aberrant birds represent intergrades or hybrids between the Myrtle and Audubon's Warblers, in which case their natal area presumably would be in a localized region of overlap in British Columbia. It is also likely that these Myrtle Warblers, and perhaps all of the individuals that migrate through the park, properly belong to the race *Dendroica coronata hooveri* McGregor, recognized in the Nineteenth Supplement to the Fourth Edition of the A. O. U. Check-List (Auk, 61: 459, 1944).

I have been informed that there may be a previous reference in the recent literature to the occurrence of such aberrant warblers, but the exigencies of naval duties prevents my locating this reference. This note is submitted to call the attention of students working in the field to the desirability of determining the frequency of the occurrence of such birds, and their range and breeding site.—LT. (J.G.) FRED MALLERY PACKARD, USNR, *Passaic, New Jersey.*

Natural hybrids between *Dendroica coronata* and *D. auduboni*.—Lieutenant Fred M. Packard wrote me some time ago that he had submitted to the Auk a statement of his observations of presumed hybrids between the Myrtle and Audubon's Warblers in Rocky Mountain National Park. Through the courtesy of Dr. Zimmer I have had the opportunity of examining his statement, published elsewhere in this issue. The basis for his suggestion was the observation of birds giving the Myrtle Warbler song but with yellow on the throat. It seems desirable to publish at the same time a description of some other Colorado specimens that seem to be hybrids, together with a brief summary of previous reports.

The distinctions between *Dendroica coronata* and *D. auduboni* are several in number, but the recombinations of these characteristics in presumed hybrids are more

difficult to analyze than in the relatively simple case of hybridization between the eastern and western flickers. In the latter case, striking new combinations are readily recognized as hybrids, even in the field. There is less possibility of obvious new combinations in hybrids of the Myrtle and Audubon's Warblers, because the only consistent, pronounced difference between the two species is the presence of a white throat in the former, a yellow one in the latter. The hybrids which I wish to describe are all presumed to be hybrids because of the fact that the throat color is not all white, nor all yellow, but is mixed. It is possible that other specimens in the collections examined are also hybrids, but in this report the criterion of hybridization has been limited to mixed throat color.

The general color pattern of these two species is so highly characteristic, and yet so nearly identical, that it is common practice to distinguish them in the field solely on the basis of throat color. They may be considered a pair of closely related species which diverged relatively recently from a common stock. Perhaps at the time of the southernmost advance of Pleistocene ice they were completely isolated geographically. We can imagine that as the ice retreated and each population extended its range to the north, the ranges approached and overlapped before complete genetic incompatibility between the species had been established. Assuming such a condition, it is not only possible but probable that hybridization occurs. Furthermore, if the species cross is fertile, it is likely that the hybrids may cross with either parent species. Hence we can expect to find not only occasional clear-cut hybrids, perhaps of first generation crosses, but descendants of various degrees of back-crosses. While the area of overlap during the breeding season may not be great, the area of overlap during migration is quite extensive. Hence, hybrids might mingle with either parent stock and eventually introduce hybrid traits in a region in which one species breeds in apparent isolation from the other. This is true because there is seemingly no factor of segregation, in behavior or ecological preference, during migration. Both species feed in the same trees at the same time during spring migration at Boulder, Colorado, and even move from tree to tree as if members of the same flock. Furthermore, if hybrids do occur, we should expect to find them particularly numerous in the region in which migration routes coincide. It is not surprising, therefore, that a relatively large number of apparent hybrids have been collected in Colorado.

The color differences between the adult males may be considered four in number (Ridgway, 'Birds of North and Middle America,' 2: 551–552): in *D. coronata* there is a white throat, black auricular region, less white on greater and middle wing coverts, white on the inner webs of the outer two or three rectrices; in *D. auduboni* there is a yellow throat, blue-gray auricular region, more white on greater and middle wing coverts, white on the inner webs of the outer four or five rectrices. To these may be added the average darker upper parts of *coronata*, and average darker breast of *auduboni*. Differences in size are probably not significant. Examination of a large series of each species leads one to believe that there would be considerable difficulty in the recognition of hybrids on the basis of variation in color of the auricular region, the amount of white on the wing coverts, or the differences in average color of upper parts and breast. Observers have been led to assume that the following conditions suggest hybrid origin: a white-throated male with four or five outer rectrices marked with white; a yellow-throated male with only two or three outer rectrices marked with white; a male in which the throat is neither all white nor all yellow, but mixed. In this report, only the last condition has been recognized as a criterion of hybrid origin.

Hybrids have been described on several previous occasions. The first time, apparently, was by W. P. Taylor (Univ. Calif. Publ. Zool., 7: 173–177, 1911). The

specimen was an adult male collected in California (M. V. Z. No. 8687). The throat was "white, modified . . . by a slight wash of yellow." The amount of white on the wing coverts was intermediate between that of the two species, as was also the color of the auricular region. The white areas on the rectrices involved the outer four, with the fourth having a slight indication of white. A much later account was that by Joseph Mailliard (Condor, 39: 223–225, 1937), in which six presumed hybrids from the Mailliard and the California Academy of Sciences collections were described. One of these specimens (Mailliard Collection No. 6840) had "some lemon-yellow feathers among the white feathers of the chin and middle throat," and had white on the fourth rectrix from the outside. Others were diagnosed as hybrids because, although the throat was white, four or more rectrices were marked with white. This method of diagnosis was questioned in a brief unsigned review of Mailliard's paper in the Auk (55: 304, 1938, probably by the late Dr. G. M. Allen) on the grounds that eastern specimens of *D. coronata* occasionally have four or more outer rectrices marked with white. As a matter of fact, there is one specimen of *D. coronata* in the Aiken Collection at Colorado College (No. 3779), from Philadelphia, which has some white on all rectrices, even the sixth. Is the existence of such a condition valid ground for considering it a hybrid? I think that is doubtful, although this same criterion has been used recently by Gayle Monson and Allan R. Phillips in a paper entitled 'Bird Records from Southern and Western Arizona' (Condor, 43: 108–112, 1941). An adult male collected in Arizona was diagnosed as a hybrid on the grounds that, while otherwise typically *coronata*, it had "large white spots on the outer four pairs of rectrices, and white edgings on the other two pairs." In the same paper the statement was made that "hybrids of these two species appear almost as commonly in Arizona as pure-blooded *coronata*," but no other criterion of hybridization was suggested.

The specimens from Colorado collections which I wish to mention are ten in number, all males, and all but one collected in Colorado. If hybrid males exist, there should also be hybrid females. Unfortunately, the distinctions between the females of these species are less definite than those which separate the males, and we are consequently not on very safe ground in speculating about hybrid females. Five of these males are from the collection of the Colorado Museum of Natural History, Denver; four from the Aiken Collection, Colorado College, Colorado Springs; and one from the University of Colorado Museum. To the authorities of the first two institutions I am indebted for the privilege of examining the specimens. These two collections are the largest in Colorado; there are over 150 specimens of the two species in the Denver collection and nearly 60 in the collection at Colorado Springs. There are 26 specimens in the University of Colorado Museum. About 160 of the total were labelled *D. auduboni*, the remainder *D. coronata*. In the aggregate, about 85% of the specimens were collected in Colorado.

All of the specimens here recorded have both white and yellow feathers in the throat patch. The general impression one receives may be that of a pale yellow throat. Closer examination shows that the yellow feathers are usually concentrated near the center and toward the anterior margin of the area. At least in those cases where white predominates, individual feathers have some yellow and some white barbs; the yellow and white occurs in patches on individual feathers.

In the Colorado Museum of Natural History, the males with mixed yellow and white throats are: No. 2263, Jefferson Co., Colo., May 2, 1911, white on margins of fourth and fifth rectrices; No. 3623, Montezuma County, Colo., May 9, 1913, outer four rectrices with white; No. 5411, Kerr Co., Texas, April 24, 1915, white spots on

outer five rectrices; No. 18418, Henderson, Colo., all six rectrices marked with white; No. 23913, Greeley, Colo., Sept. 16, 1942, only three outer rectrices with white. Of these, Nos. 3623 and 5411 were labelled *D. auduboni;* the other three were labelled *D. coronata,* but No. 2263 has "auduboni" written in pencil above the word "coronata." No. 23913 is quite typically *coronata* except for a few yellow feathers in the anterior lateral margins of the throat patch.

In the Aiken Collection, the apparent hybrids, all males, are as follows: No. 3784, El Paso Co., Colo., May 18, 1878, only the outer three rectrices with white; No. 3792, nr. Colorado Springs, Colo., May 8, 1900, first five rectrices all with white; No. 6758, Colorado Springs, Colo., May 2, 1929, all rectrices marked with white, though very narrow on sixth; No. 6762, Colorado Springs, Colo., April 24, 1933, outer five rectrices with white. The first and third specimens have black auriculars; the second, blue-gray; the fourth, dark gray (darker than *auduboni,* lighter than *coronata*). The white markings on the wing coverts are less conspicuous in every case than in typical *auduboni.* No. 6758 was labelled "hybrid"; the others were labelled *D. auduboni.*

The presumed hybrid in the University of Colorado Museum (No. 4285) is similar to No. 23913 in the Denver collection, but with even less yellow in the throat. It was collected at Boulder, Colo., April 30, 1937. The outer three rectrices are the only ones marked with white. All coloration is typically *coronata,* except for the presence of a faint yellow wash on the throat. This is produced by diffuse yellow patches involving part of the rachis and a few adjacent barbs and barbules on about eighteen feathers; no one feather is as much as half yellow on the exposed part.

In this last-named specimen, as in all others closely examined, the yellow pigment seems to be just as bright in the hybrid specimens as in the others; the pale appearance is due to restriction in area, either to fewer feathers or to portions of individual feathers. The reduction in yellow on the throat is not associated with reduction in yellow in the other patches which are typically yellow. It appears that we are dealing here with a criterion of hybridization as valid as any we might obtain without direct observation of cross-breeding.—GORDON ALEXANDER, *University of Colorado, Boulder, Colorado.*

Random distributional records.—In the course of work and study on the combined bird collections of the United States National Museum and the U. S. Fish and Wildlife Service (Biological Survey), the writer has found certain data which he feels will add to our present knowledge of the distribution of those species which follow:

Puffinus carneipes Gould

George G. Cantwell obtained an adult female specimen of the Pale-footed Shearwater on June 18, 1920, at a point ten miles offshore from Cape Flattery, Washington. This specimen, now in the Biological Survey collection, constitutes the only known record of this species from the State of Washington. Other specimens of this shearwater have been recorded from the vicinity of Point Pinos, California, by Beck [Proc. Calif. Acad. Sci., 3 (Series 4): 66, 1910] and from Goose Island Banks, British Columbia by Cowan (Murrelet, 23: 69, 1940). P. W. Martin (Condor, 44: 28, 1942) also lists specimens from Goose Island Banks, which are now in the Provincial Museum at Victoria, British Columbia. Brooks (Condor, 44: 33, 1942) lists several sight observations of this species from north of Queen Charlotte Islands by R. M. Stewart, and one in Victoria Harbor by Captain G. D. Sprot. Although this species has been reported but a few times for North America, it perhaps is fairly regular in occurrence off the Pacific coast of the United States and Canada, as pointed out by