

- Haematopus palliatus.** OYSTER-CATCHER.
Colinus virginianus texanus. TEXAS BOB-WHITE.
Zenaidura macroura carolinensis. MOURNING DOVE.
Chaemepelia passerina pallescens. MEXICAN GROUND DOVE.
Scardafella inca. INCA DOVE.
Polyborus cheriway. AUDUBON'S CARACARA.
Geococcyx californianus. ROAD-RUNNER.
Ceryle americana septentrionalis. TEXAS KINGFISHER.
Dryobates scalaris bairdi. TEXAS WOODPECKER.
Centurus aurifrons. GOLDEN-FRONTED WOODPECKER.
Chordeiles acutipennis texensis. TEXAS NIGHTHAWK.
Muscivora forficata. SCISSOR-TAILED FLYCATCHER.
Pyrocephalus rubinus mexicanus. VERMILION FLYCATCHER.
Otocoris alpestris giraudi. TEXAS HORNED LARK.
Xanthoua luxuosa glaucescens. GREEN JAY.
Agelaius phoeniceus richmondi. VERA CRUZ RED-WING.
Sturnella magna hoopesi. RIO GRANDE MEADOWLARK.
Cardinalis cardinalis canicaudus. GRAY-TAILED CARDINAL.
Passerina ciris. PAINTED BUNTING.
Spiza americana. DICKCISSEL.
Vireo belli belli. BELL'S VIREO.
Mimus polyglottos leucopterus. WESTERN MOCKINGBIRD.
Toxostoma longirostre sennetti. SENNETT'S THRASHER.
Toxostoma curvirostre curvirostre. CURVED-BILLED THRASHER.
Baeolophus atricristatus atricristatus. BLACK CRESTED TIT-
 MOUSE.
1974 Broadway, New York.

THE LATER FLIGHTS OF THE PASSENGER PIGEON.

BY FRANK BOND.

Plate XVIII.

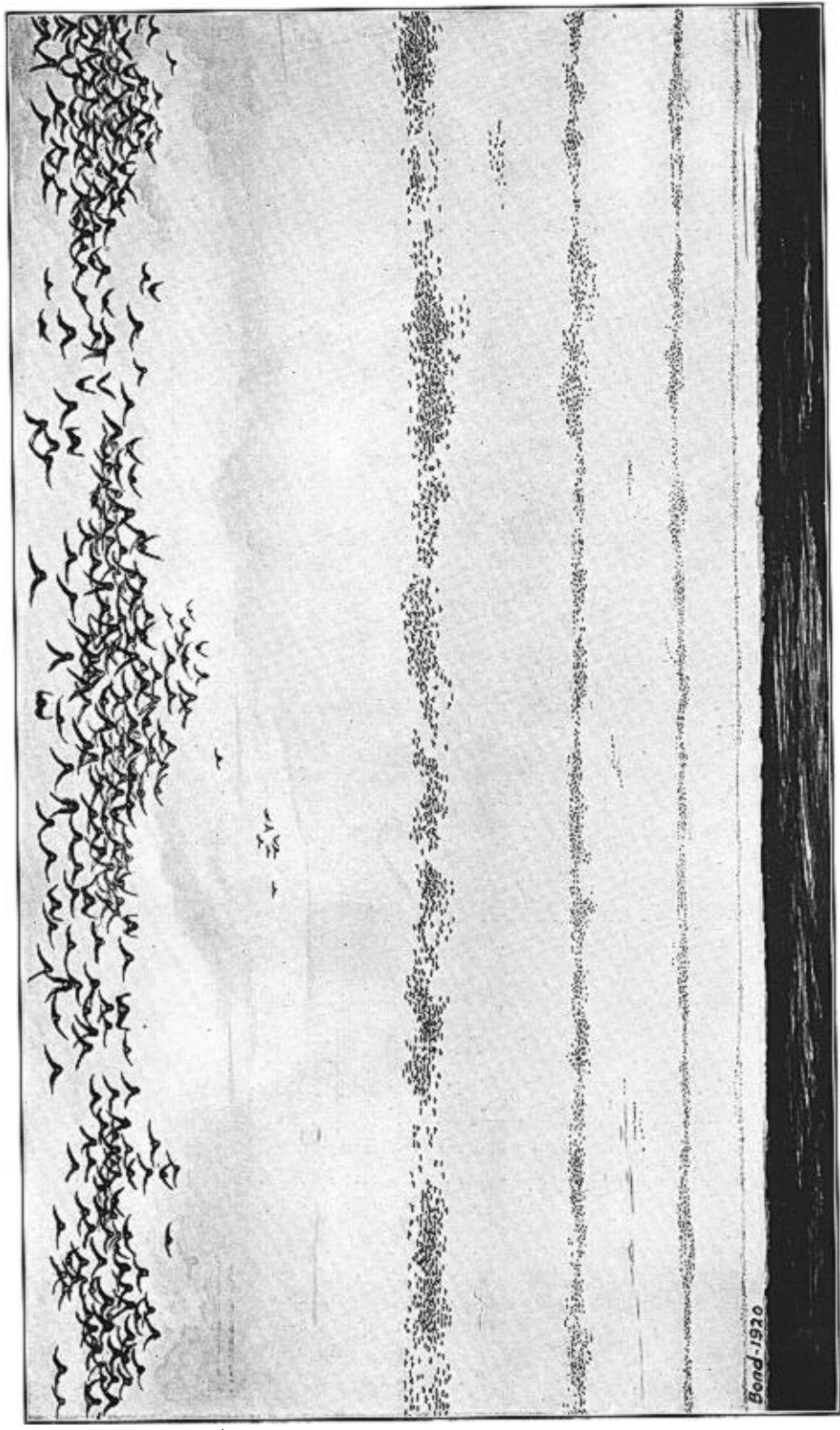
BETWEEN the years 1872 and 1875 or 1876, eastern Iowa, for a distance of sixty or more miles west of the Mississippi River, witnessed many intermittent flights of the fast dwindling flocks of the Passenger Pigeon. At that time I was not familiar with

the stories of the pigeon flights over Ohio and Kentucky and other territory east of the Mississippi, related by Wilson and Audubon, or, probably, I should have been impressed with the difference between flights occurring prior to 1845 and those between 1870 and 1880. It will be recalled that Wilson and Audubon described the pigeon flocks as being so vast in extent that they darkened the sky for several successive days. As I read their descriptions, the pigeons literally spread a dark blanket of roaring wings over the earth, interfering with the light from the sun to the extent that a twilight condition prevailed not only all day but for several days in succession.

The rapid destruction of the pigeons between the dates mentioned should, one would think, have warned thoughtful students of wild life of the complete destruction of this edible species at an early date, but if fears existed the publications of the period do not appear to have been utilized for the purpose of arousing public interest and concern therein. So to us in the 70's the flights of pigeons seemed tremendous and were wholly without a warning thought or suggestion that the hundreds of thousands, or possibly millions, we saw passing over were but the fast disappearing remnants of the billions that turned day into night much less than fifty years before.

These later flights of the Passenger Pigeon were unlike those described by Audubon and Wilson. They were as direct, as swift, as full of evident purpose, as those of the earlier years, but the sadly reduced numbers of the birds did not permit of clouds that blanketed and darkened the skies.

I have presented herewith a reproduction of a water color sketch of the pigeon flights of the early 70's, as I remember them. The birds flew in long lines or ranks, endless as far as we could see, extending from one horizon to the other, or at least far enough for the ends of the lines to be swallowed up in the haze and mists of distance. These lines were by no means uniform in density throughout. The birds were unevenly distributed. At times there would be larger and denser bodies, often connected by continuous thinner lines, or even separated here and there by an open space, or a space containing so few birds as to appear open



Bond 1910

A FLIGHT OF PASSENGER PIGEONS.

at a distance. These tremendous lines of pigeons were followed by others like them, at distances apart, as I recall them, varying from a few hundred yards to a half mile or more. I can only estimate these distances from my memory of the picture the sky offered at the time. They are rough estimates only, but I remember distinctly that while the long extended lines were parallel the distances between them varied greatly. Then there was one other interesting feature of these flights that, had Audubon observed them, would very likely have suggested to his mind that even yet there lingered traces of flight instinct of the years when billions darkened the sky in impenetrable formation. Scattered at haphazard between the great bodies moving with military precision were irregular smaller flocks, varying in number from perhaps a dozen to fifty birds. Whether these had pushed ahead because of their hurry, had fallen back because of weariness, or whether accident in organizing the original flight formation was the reason for this independent and apparently unorganized flight, is open to conjecture. They looked somewhat like small scouting parties, watchful for the safety of the main armies with which they moved.

Upon reading this paper before the 1920 meeting of the American Ornithologists' Union, the question arose in discussion whether the flocks were spread out laterally or lengthwise in the line of flight like crows, and I would repeat that in my experience they were always spread out laterally as shown in my painting, advancing on a wide front.

It may be interesting also to give a brief description of one of the feeding habits of the Passenger Pigeon which I observed during the period of these pigeon flights and with which I interfered to the extent of my ability, using as a weapon an old army musket which had seen service in the Civil War but which had been smooth-bored to meet the requirements of peace conditions. Among other farm activities my father fattened cattle for the Chicago market, stuffing them chiefly with corn raised on the farm. This feeding was carried on during the winter months and when ready for the market the animals were shipped in the early spring, I think early in March, and of course the grounds of the stock-

yards, containing several acres, were covered, in fact buried deeply, with lost and partially digested grains of corn. This feast the pigeons discovered daily and thousands of them swooped down into the deserted yards until the grounds were swept clean. Here was good hunting, pot hunting pure and simple, for while the birds were most abundant no musket was aimed at a single bird on the ground or in a tree top, much less in flight. The pigeons in flocks of thousands would alight on the ground, and in the manner of domesticated pigeons, with which all are familiar, move rapidly, watchful for the corn around them, picking up the grains nearest and then, necessarily and constantly, moving forward. Of course they soon discovered that the birds in the front rank got the grain and so was presented an interesting phenomenon. It might possibly be likened to a moving waterfall, for the birds in the rear of the progressing flock continually took the air and in large numbers dropped down just in front, where the grain was plentiful.

The stockyards were located just in the edge of heavily timbered lands containing many species of acorn bearing oaks, walnut and butternut trees, and in the open glades hazel bushes. In March, of course these trees were bare of leaves and the pigeons would alight in their tops so densely that the pot shot always brought down many.

I do not know the last year the Passenger Pigeons were seen in eastern Iowa. I left the State in March, 1882, and have never returned to the woods and farm in Johnson County to which these memories have carried back. I may say, however, that for a number of years after the flights and feeding of pigeons which I have briefly described, a few birds were killed annually in the mast bearing woods of the neighborhood.

I recall seeing but the small straggling remnants, little flocks of four to six or seven birds possibly. These foraged in the tree-tops and were extremely wild and unapproachable, but what should one expect during those last days of their rapidly enforced flight toward extinction? Their going out of the world for all time suggests the similar experience undoubtedly had by the unknown and harmless race of men who, in their final struggle

for existence many centuries ago, fled from their persistent enemies to the high and inaccessible cliffs of the arid southwest, and there, in rapidly dwindling numbers, eked out a meager and miserable existence until all were gone.

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REMARKS ON THE MIGRATION OF SOUTHERN HEMISPHERE ALBATROSSES AND PETRELS.

BY LEVERETT MILLS LOOMIS.

No other migratory movements illustrate the migration of birds better than those of the albatrosses and petrels breeding in the Southern Hemisphere. With the close of the season of reproduction, there are northward movements that stop short of the equator, transequatorial ones to northern latitudes, and movements that lead in a southward direction.

The migratory movements that fall short of the equator are well exemplified in the Antarctic Fulmar (*Thalassoica antarctica*), Snowy Petrel (*Pagodroma nivea*), Lesson's Petrel (*Pterodroma lessoni*), and White-chinned Petrel (*Procellaria aequinoctialis*).

Transequatorial migration to northern latitudes is typically illustrated in the Juan Fernandez Petrel (*Pterodroma externa*), Neglected Petrel (*Pterodroma neglecta*), Mottled Petrel (*Pterodroma inexpectata*), Great Shearwater (*Puffinus gravis*), Cooper's Shearwater (*Puffinus creatopus*), Flesh-footed Shearwater (*Puffinus carneipes*), Sooty Shearwater (*Puffinus griseus*), Slender-billed Shearwater (*Puffinus tenuirostris*), and Wilson's Petrel (*Oceanites oceanicus*). The Sooty Shearwaters occurring in myriads on the Pacific Ocean off Point Pinos, California, shed a flood of light upon this phase of bird migration. On their arrival in spring, the adult ones are in worn plumage, and have dormant