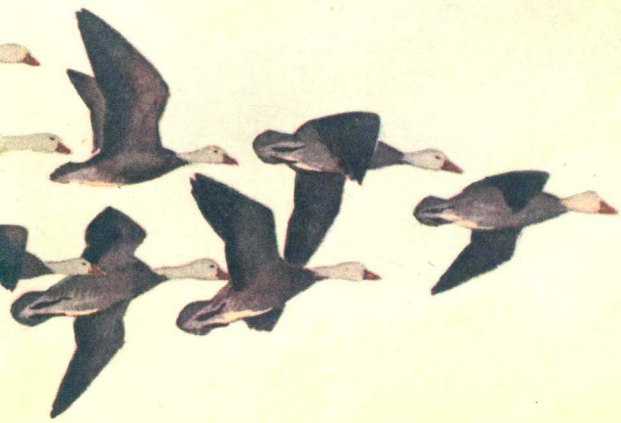


THE
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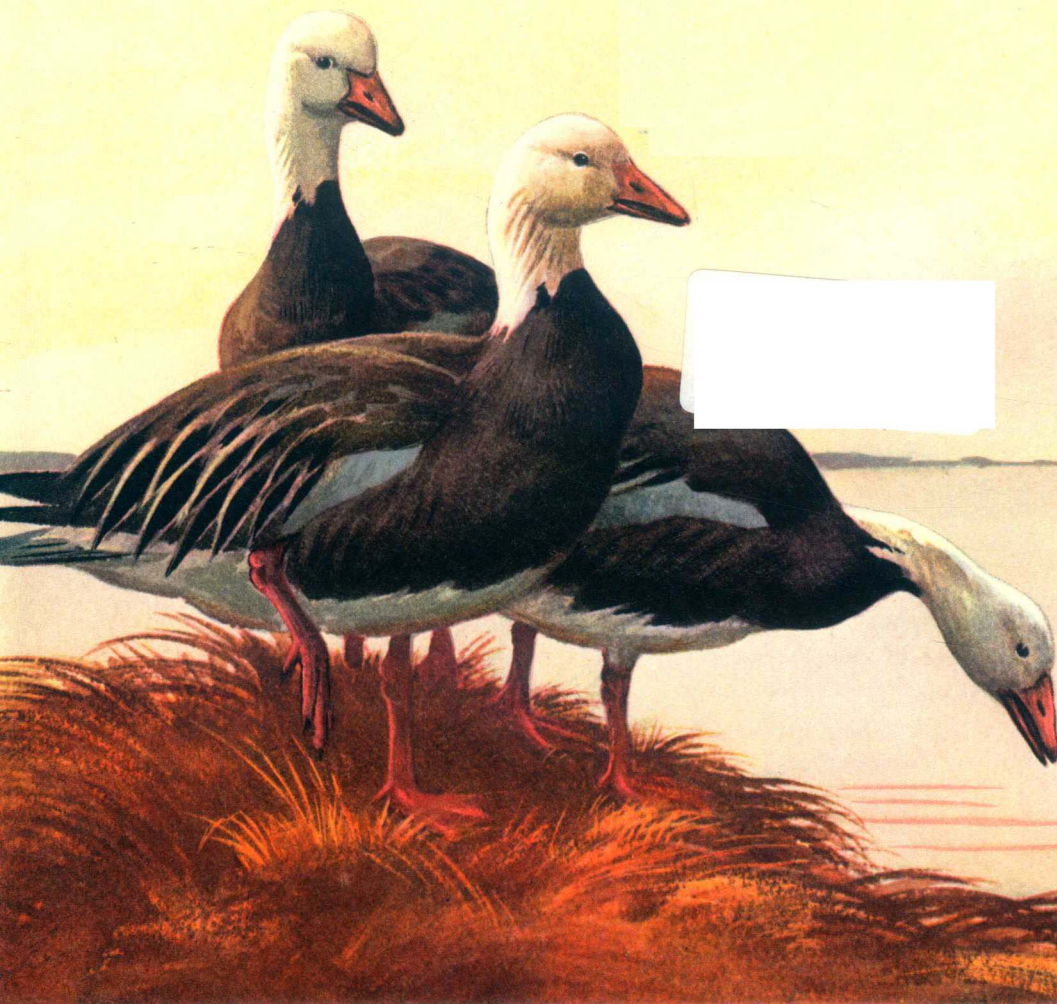
The WORLD OF BIRDS

James Fisher and
Roger Tory Peterson

DOUBLEDAY & COMPANY, INC., GARDEN CITY, NEW YORK

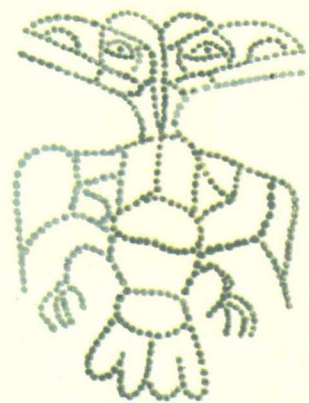
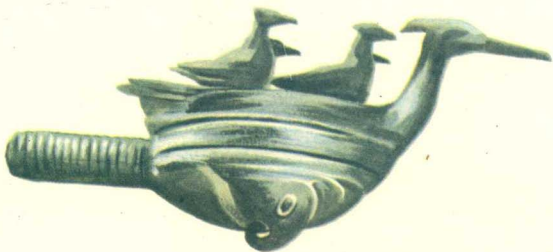


BIRD PAINTINGS BY ROGER TORY PETERSON



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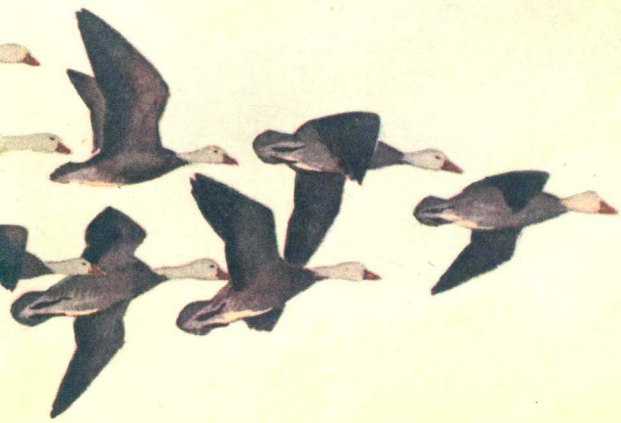
King vultures



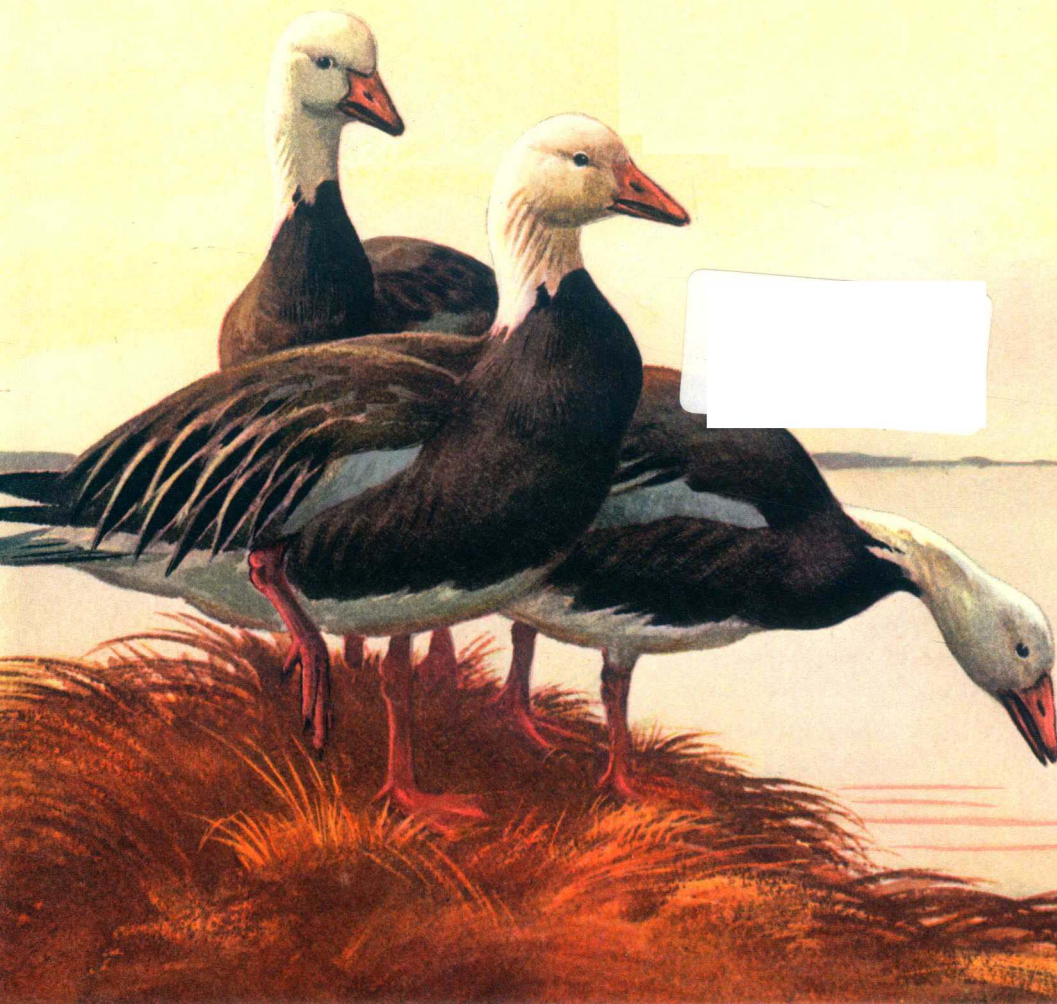
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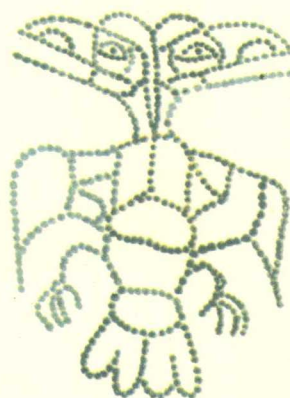
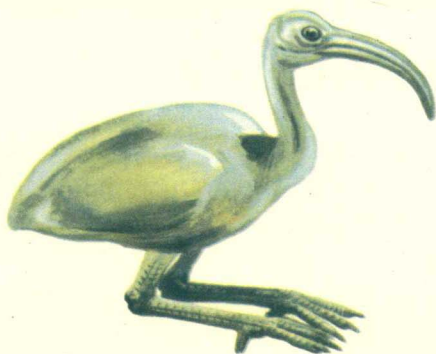
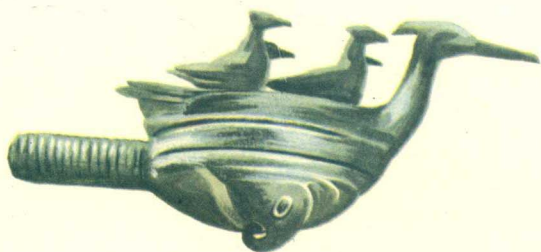


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Introduction

Each of us has enjoyed a life in which, for close on half a century, his major preoccupation has been with birds. The most beautiful, the most observable animals of the world have occupied our daily lives, have filled our dreams, dominated our reading, directed our conversation.

For the last twelve years we have watched birds together in eleven countries, disputed them in our homes, pursued them, or their literature, or their skins, in a dozen libraries or museums and scores of zoos. For the last five we have been planning and researching this book; Roger Tory Peterson (RTP) has painted the pictures (other than maps) mostly in his studio in New England, and the text was put into the first draft by James Fisher (JF) mostly at his desk in England.

Of the modern books on the birds of the world two outstanding examples have been made by men whom we are proud to claim as friends and respected colleagues. They are *Living Birds of the World* by E. Thomas Gilliard (1958) and *Birds of the World* by Oliver L. Austin Jr., illustrated by Arthur Singer (1961). Both these fine works have presented the avifauna of our planet, family by family. We have approached the subject in a different way, though we have figured at least one member of nearly every family, past and present.

In 1962, according to our own researches, 8,580 good, full species of birds were known to be alive on earth. Our aim has been to analyze this galaxy, the end-product of 140 million years of evolution: and to present birds as animals, in an illustrated introduction to their general natural history, from important approaches that have inspired ornithologists through the years.

The first part of this book considers some of these approaches, in the hope that ornithology's many-sidedness can be appreciated, and that our beloved science can be understood as a branch of biology in its widest sense that happens to be blessed with gorgeous material.

Just how varied this material is must be known to all without turning the page where RTP has painted (key on p. 13) 23 birds from all over the world, from 23 of the 154 families now living.

The second part gets down to the techniques, tools and tasks of international bird watching; and in it we include a full classification and mapping of the class of birds down to families (and in some cases beyond), with a census of the acceptable genera and species in each – those fossil, those recently extinct and those living. The book closes with an essay on birds in their relation to men.

James Fisher and Roger Tory Peterson





CHAPTER I

The Variety of Birds

Distribution of bird variety

There is no square mile of the surface of our planet, wet or dry, that has not been crossed by the shadow of a bird – except perhaps some of the Antarctic Continent.

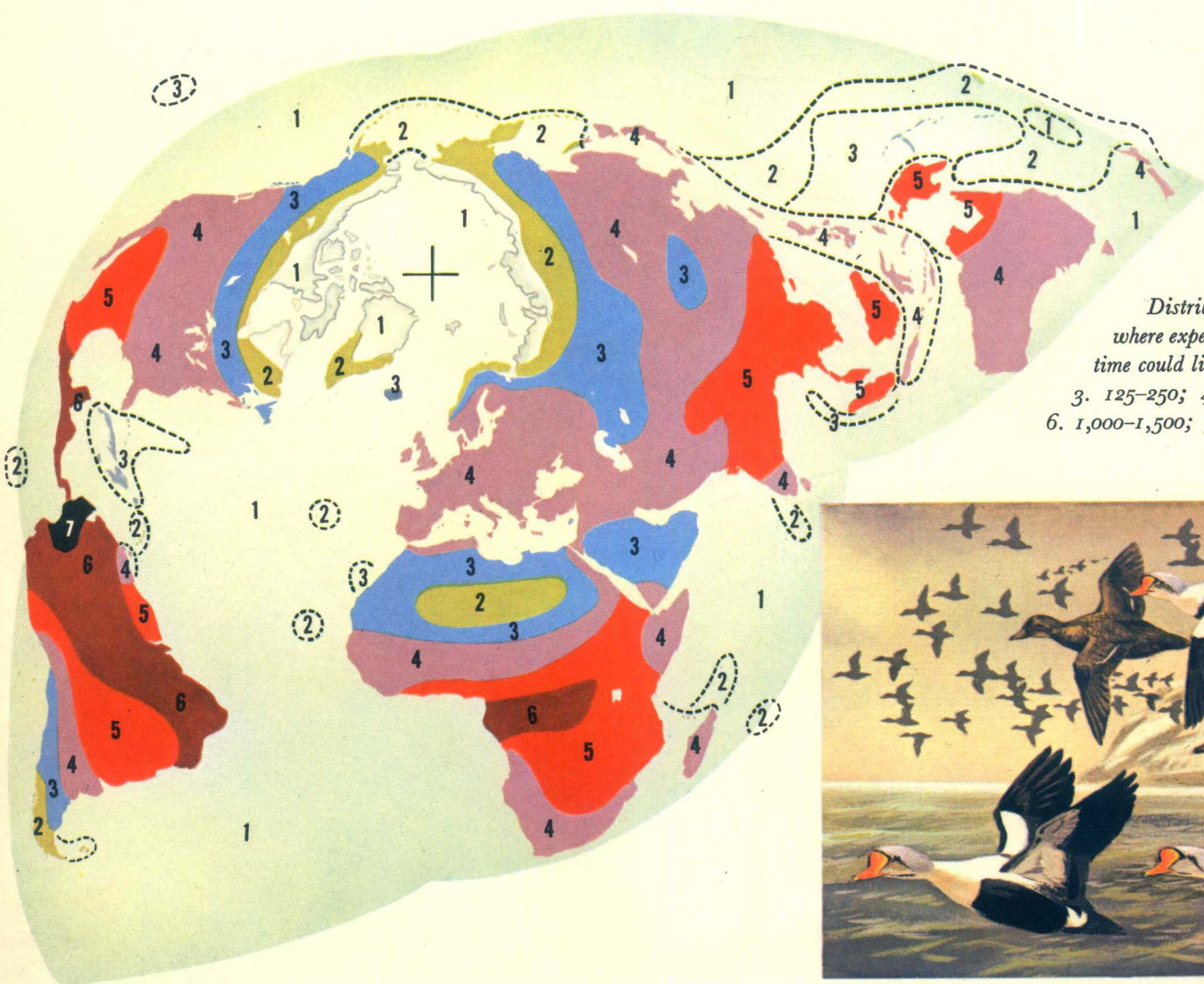
Though at least four species of birds have been seen at or near the North Pole, only one (a skua) has visited the South Pole. But two petrels breed on mountains jutting through the ice-cap, miles inland on the frozen continent; and some penguin colonies are out of sight of its shore. Altogether, sixteen species, all sea birds, nest on the Antarctic Continent or on islands within sight of it. If we bring in the antarctic and subantarctic islands, we cannot raise our list to much over 50.

All the areas with a poor avifauna (1 on the map) are polar or oceanic; land birds are lacking or few. Thus going east across the Pacific's scattered archipelagos we find a progressive diminution in the number of native land birds, from about 127 in the Solomons, 77 in New Caledonia, 54 in Fiji, 33 in Samoa, 17 in the Society Is.,

11 in the Marquesas, 4 on distant Henderson I. to none on Easter I., most isolated of all (though a pigeon, tinamou and an icterid have been introduced there). Such birds as inhabit the poor areas are, however, specialized and often very successful, with enormous populations. The antarctic Wilson's storm petrel may be the world's most numerous sea bird. Some polar and subpolar auk and penguin islands have over a million birds in a single rookery.

Areas which have an impoverished (2) or low (3) avifauna include important archipelagos which have been more or less difficult for birds to colonize because of their remoteness, and most of the deserts, both hot and cold. Large areas of the northern world within the tree line – the taiga zone in Eurasia, the conifer zone in Canada and Alaska – have lists of under 250 species.

Medium-sized avifaunas of under 500 species (4) are found mainly in temperate savannah countries; also in some semidesert tropics and in the central East Indies. These are the faunas most of us know best. Typical lists are Tasmania 255, New Zealand 256, Serbia 288, Hong Kong 289, Portugal 315, Alberta 317, Macedonia 319, Finland 327, Norway 333, Greece 339, Afghanistan 341, Maine 350, Ussuriland 353, Iraq 354, Ceylon 379,



Distribution of bird variety: area where expert bird recorder in active life-time could list: 1. Under 63; 2. 63-125; 3. 125-250; 4. 250-500; 5. 500-1,000; 6. 1,000-1,500; 7. Over 1,500 species



In polar regions species are few, but the few are usually well adapted and abundant. Great flocks of king eiders arrive in May in high arctic North Greenland, where in some districts they are commonest water birds



Key
to
the
birds
figured
on
pages
10
and
11

Israel nearly 400, Japan 425, Western Australia 436, Great Britain and Ireland – and the Philippines, about 450, Senegal and Sierra Leone 485, Eastern Nigeria 488.

Large avifaunas of under 1,000 species (5) are found in the oriental tropics (e.g. Borneo 554, Malaya 575, Burma 953), New Guinea (650) and neighboring tropical Australia, the tropical savannahs and forest-edge of Africa (e.g. Eritrea 551, Ghana 627, Cameroons 670, N. Rhodesia 674, Sudan 871, Africa s. of Angola and the Zambesi 875), N. and C. America (Texas 545, México 967) and S. America (Surinam 567).

Really huge bird lists (6) are few. The only country in Africa with a bird list of over a thousand is the basin of the River Congo, the most densely forested part of equatorial Africa: what was the Belgian Congo and Ruanda Urundi combined have 1,040. But for Central

America from southern México to Panamá about 1,190 species are listed, for Venezuela 1,282, for Ecuador 1,357, for Brazil about 1,440, mostly contributed by the great Amazon belt and other tropical forest zones. In tropical forests species swarm – though few have the vast populations typical of some of the temperate and many of the polar species – and (p. 64) belong to three communities at different levels.

The only country with a bird list over 1,500 (7) is Colombia. In 1963 its recorded species totaled over 1,700, twice as many birds as those of continental U.S.A. and Canada combined (775). It is the heartland of ornithological variety on our planet.

Tropics support much bird variety. First met by us one day in C. México; l. to r., above: mountain trogon, masked tityra, emerald toucanet, red-legged honeycreeper; below: rufescent tinamou, white-fronted dove



Winter in temperate eastern U.S. Three black-capped chickadees; two slate-colored juncos; two blue jays; cardinal and white-breasted nuthatch at feeder; cowbird flying; hairy woodpecker on post; white-throated sparrow on ground



Wings and flight

Within their limits of speed and height, birds are more efficient aircraft than man has yet been able to design. Boundary layer control, which reduces drag by drawing air through the wing from top to bottom, was probably solved by Archaeopteryx. Human engineers are still only at the experimental stage with this principle.

Some techniques, notably dynamic soaring, are known to man in theory only. Yet albatrosses and the larger petrels have been masters of the ocean for millions of years by exploiting the fact that in a windy sea there is (owing to friction) a steep descending gradient of wind speed downwards to the surface of the sea.

This layer-cake of wind at different velocities enables big long-winged gliding sea birds to glide in a complex way in any direction within a segment of much more than 180 degrees. They tack and zigzag if their objective is in the wind's eye; and use their engines mainly for maneuver.

Figured on these pages are some typical examples of wing adaptation. The Laysan albatross has a wing of the highest aspect ratio – span high in proportion to its fore-

aft wing breadth, or chord – which gives the greatest lift for its dynamic style of flight. A bird which needs to accelerate fast, such as a ruffed grouse, has a low aspect ratio.

The wing-loading of birds (weight per square foot of wing area) varies from about a tenth of a pound to 2½ pounds. The most agile flyers, which range from frigate birds, tropic birds and the long-tailed skua to some flycatchers, wood swallows and hummers tend to have low wing-loadings and rather high aspect ratios: the red-tailed tropic bird is perhaps the biggest bird that has been seen to fly momentarily backwards when checking in maneuver. Birds of prey like the broad-winged hawk, which are long-distance migrants, make much ground by soaring, taking advantage of rising columns of air, and tend to have a lowish aspect ratio and low or medium wing-loading. A typical broad general-purpose wing is that of the white ibis which makes longish regular flights and also soars. Owls, like the great horned owl, have a rather similar wing formula with feather adaptations for silent flight.

Some birds with fairly high wing loadings are capable of long migratory journeys; thus the white-fronted goose

Wing-beats per second of some groups of birds

