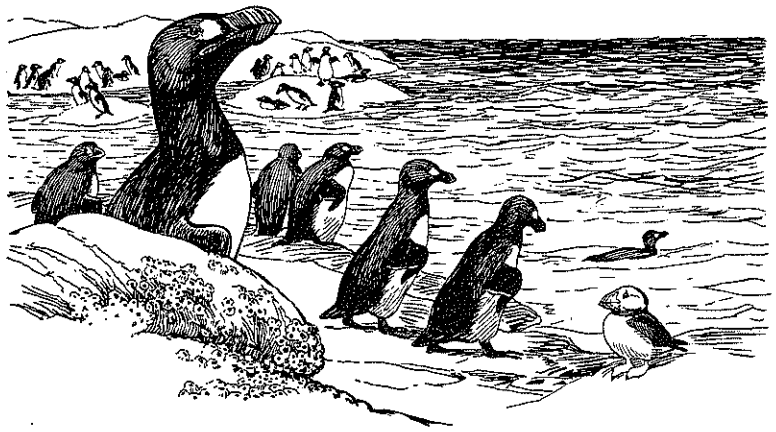


These Penguins are as bigge as Geese, and flie not . . . and they multiply so infinitely upon a certain flat Iland, that men drive them from thence upon a boord into their Boates by hundreds at a time; as if God had made the innocencie of so poore a creature to become an admirable instrument for the sustenation of man. —Richard Whitbourn (1618)

1 : *The Outlying Rocks*

In early June of 1844, a longboat crewed by fourteen men hove to off the skerry called Eldey, a stark, volcanic mass rising out of the gray wastes of the North Atlantic some ten miles west of Cape Reykjanes, Iceland. On the islets of these uneasy seas, the forebears of the boatmen had always hunted the swarming sea birds as a food, but on this day they were seeking, for collectors, the eggs and skins of the garefowl or great auk, a penguin-like flightless bird once common on the ocean rocks of northern Europe, Iceland, Greenland, and the maritime provinces of Canada. The great auk, slaughtered indiscriminately across the centuries for its flesh, feathers, and oil, was vanishing, and the last birds, appearing now and then on lonely shores, were granted no protection. On the contrary, they were pursued more intensively than ever for their value as scientific specimens.

At the north end of Eldey, a wide ledge descends to the water, and, though a sea was running, the boat managed to land three men, Jon Brandsson, Sigourour Isleffson, and Ketil Ketilsson. Two auks, blinking, waddled foolishly across the ledge. Isleffson and Brandsson each killed a bird, and Ketilsson, discovering a solitary egg, found a crack in it and smashed it. Later, one Christian Hansen paid nine pounds for the skins, and sold them in turn to a Reykjavik taxidermist named Möller. It is not known what became of them thereafter, a fact all the more saddening when one considers that, on all the long coasts of the northern ocean, no auk was ever seen alive again.

The great auk is one of the few creatures whose final hours can be documented with such certainty. Ordinarily, the last members of a species die in solitude, the time and place of their passage from the earth unknown. One year they are present, striving instinctively to maintain an existence many thousands of years old. The next year they are gone. Perhaps stray auks persisted a few years longer, to die at last through accident or age, but we must assume that the ultimate pair fell victim to this heedless act of man.

One imagines with misgiving the last scene on desolate Eldey. Offshore, the longboat wallows in a surge of seas, then slides forward in the lull, its stem grinding hard on the rock ledge. The hunters hurl the two dead birds aboard and, cursing, tumble after, as the boat falls away into the wash. Gaining the open water, it moves off to the eastward, the rough voices and the hollow thump of oars against wood tholepins unreal in the prevailing fogs of June. The dank mist, rank with marine smells, cloaks the dark mass, white-topped with guano, and the fierce-eyed gannets, which had not left the crest, settle once more on their crude nests, hissing peevishly and jabbing sharp blue bills at their near neighbors. The few gulls, mewing aimlessly, circle in, alighting. One banks, checks its flight, bends swiftly down upon the ledge, where the last, pathetic generation of great auks gleams raw and unborn on the rock. A second follows and, squalling, they yank at the loose embryo, scattering the black, brown, and green shell segments. After a time they return to the crest, and the ledge is still. The shell remnants lie at the edge of tideline, and the last sea of the flood, perhaps, or a rain days later, washes the last piece into the water. Slowly it drifts down across the sea-curled weeds, the anchored life of the marine world. A rock minnow, drawn to the strange scent, snaps at a minute shred of auk albumen; the shell fragment spins upward, descends once more.

Farther down, it settles briefly near a *littorina*, and surrounding molluscs stir dully toward the stimulus. The periwinkle scours it, spits the calcified bits away. The current takes the particles, so small as to be all but invisible, and they are borne outward, drifting down at last to the deeps of the sea out of which, across slow eons of the Cenozoic era, the species first evolved.

For most of us, its passing is unimportant. The auk, from a practical point of view, was doubtless a dim-witted inhabitant of Godforsaken places, a primitive and freakish thing, ill-favored and ungainly. From a second and a more enlightened viewpoint, the great auk was the mightiest of its family, a highly evolved fisherman and swimmer, an ornament to the monotony of northern seas, and for centuries a crucial food source for the natives of the Atlantic coasts. More important, it was a living creature which died needlessly, the first species native to North America to become extinct by the hand of man. It was to be followed into oblivion by other creatures, many of them of an aesthetic and economic significance apparent to us all. Even today, despite protection, the scattered individuals of species too long persecuted are hovering at the abyss of extinction, and will vanish in our lifetimes.

The slaughter, for want of fodder, has subsided in this century, but the fishes, amphibians, reptiles, birds, and mammals—the vertebrate animals as a group—are obscured by man's dark shadow. Such protection as is extended them too rarely includes the natural habitats they require, and their remnants skulk in a lean and shrinking wilderness. The true wilderness—the great woods and clear rivers, the wild swamps and grassy plains which once were the wonder of the world—has been largely despoiled, and today's voyager, approaching our shores through the oiled waters of the coast, is greeted by smoke and the glint of industry on our fouled seaboard, and an inland prospect of second growth, scarred landscapes, and sterile, often stinking, rivers of pollution and raw mud, the whole bedecked with billboards, neon lights, and other decorative evidence of mankind's triumph over chaos. In many regions the greenwood not converted to black stumps no longer breathes with sound and movement, but is become a cathedral of still trees; the plains are plowed under and the prairies ravaged by overgrazing and the winds of drought. Where great, wild creatures ranged, the vermin prosper.

The concept of conservation is a far truer sign of civilization than that spoliation of a continent which we once confused with progress. Today,

very late, we are coming to accept the fact that the harvest of renewable resources must be controlled. Forests, soil, water, and wildlife are mutually interdependent, and the ruin of one element will mean, in the end, the ruin of them all. Not surprisingly, land management which benefits mankind will benefit the lesser beasts as well. Creatures like quail and the white-tailed deer, adjusting to man, have already shown recovery. For others, like the whooping crane, it is probably much too late, and the grizzly bear and golden eagle die slowly with the wilderness.

This book is a history of North American wildlife, of the great auk and other creatures present and missing, of how they vanished, where, and why; and of what is presently being done that North America may not become a wasteland of man's creation, in which no wild thing can live.

"Everybody knows," one naturalist has written, "that the autumn landscape in the north woods is the land, plus a red maple, plus a ruffed grouse. In terms of conventional physics, the grouse represents only a millionth of either the mass or the energy of an acre. Yet subtract the grouse and the whole thing is dead."[1]*

The finality of extinction is awesome, and not unrelated to the finality of eternity. Man, striving to imagine what might lie beyond the long light years of stars, beyond the universe, beyond the void, feels lost in space; confronted with the death of species, enacted on earth so many times before he came, and certain to continue when his own breed is gone, he is forced to face another void, and feels alone in time. Species appear and, left behind by a changing earth, they disappear forever, and there is a certain solace in the inexorable. But until man, the highest predator, evolved, the process of extinction was a slow one. No species but man, so far as is known, unaided by circumstance or climatic change, has ever extinguished another, and certainly no species has ever devoured itself, an accomplishment of which man appears quite capable. There is some comfort in the notion that, however *Homo sapiens* contrives his own destruction, a few creatures will survive in that ultimate wilderness he will leave behind, going on about their ancient business in the mindless confidence that their own much older and more tolerant species will prevail.

The *Terra Incognita*, as cartographers of the Renaissance referred to North America, had been known to less educated Eurasians for more than ten thousand years. Charred animal bones found here and there in the

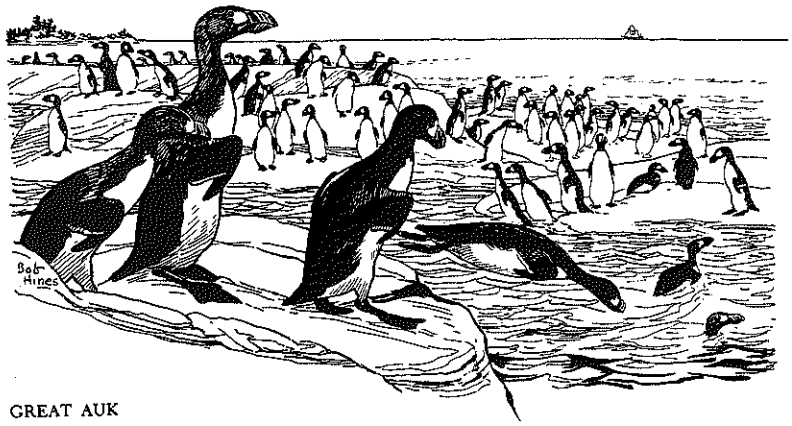
* Reference Notes begin on page 285.

West, and submitted to the radiocarbon test, have been ascribed to human campfires laid at least twenty-five thousand years ago. Thus one might say that the effect of man on the fauna of North America commenced with the waning of the glaciers, when bands of wild Mongoloid peoples migrated eastward across a land bridge now submerged by the shoal seas of the Bering Strait. In this period—the time of transition between the Pleistocene and Recent epochs—the mastodons, mammoths, saber-toothed tigers, dire wolves, and other huge beasts which had flourished in the Ice Age disappeared forever from the face of the earth, and the genera which compose our modern wildlife gained ascendancy.

Man was perhaps the last of the large mammals to find the way from Asia to North America. In any case, many species had preceded him. The members of the deer family—the deer, elk, moose, and caribou—had made the journey long before, as had the bison, or buffalo, and the mountain sheep. Among all modern North American hoofed mammals, in fact, only the pronghorn antelope emerged originally on this continent. The gray wolf, lynx, beaver, and many other animals also have close relations in the Old World, so close that even today a number of them—the wolverine and the Eurasian glutton, for example, and the grizzly and Siberian brown bear—are widely considered to be identical species. Similarly, many bird species are common to both continents, including the herring gull, golden plover, mallard, and peregrine falcon. The larger groupings—the genera and families which contain those species and many others—are widespread throughout the Northern Hemisphere. Even among the songbirds, which are quite dissimilar on the two continents in terms of individual species, the only large American family which has no counterpart in Eurasia is that of the colorful wood warblers, *Parulidae*.

Since the American continents are connected overland, it seems rather strange that the faunas of North America and Eurasia are more closely allied than the faunas of North and South America. One must remember, however, that the Americas were separated for fifty million years or more in the course of the present geologic era, and during this time their creatures had evolved quite differently. It is only in recent times, in geological terms —two million years ago, perhaps—that the formation of the huge icecaps, lowering the oceans of the world, permitted the reappearance of the Panama bridge between Americas.

The animals moved north and south across this land bridge, just as they had moved east and west across the dry strait in the Arctic. But the



GREAT AUK

South American forms, become senile and over-specialized in their long period of isolation, were unable to compete with the younger species which were flourishing throughout the Northern Hemisphere. Many archaic monkeys, marsupials, and other forms were rapidly exterminated by the invaders. Though a certain interchange took place across the land bridge, the northern mammalian genera came to dominate both continents, and their descendants comprise virtually all the large South American animals of today, including the cougar, jaguar, deer, peccaries, and guanacos.

The armadillo, opossum, and porcupine, on the other hand, are among the primitive creatures which arrived safely from the opposite direction and are still extending their range. A large relation of the armadillo, *Boreostracon*, and a mighty ground sloth, *Megatherium*, also made their way to North America. These slow-witted beasts penetrated the continent as far as Pennsylvania, only to succumb to the changes in climate which accompanied the passing of the Ice Age.

The mass extermination of great mammals at this time occurred everywhere except in Africa and southern Asia. Alteration of environment brought about by climatic change is usually held accountable, but the precise reasons are as mysterious as those offered for the mass extinction of the dinosaurs some seventy million years before. Even among large animals the extinctions were by no means uniform: in North America

the moose and bison were able to make the necessary adaptations, while the camel and horse were not. The camel family survived in South America in the wild guanaco and vicuña, but the horse was absent from the Eastern Hemisphere until recent centuries, when it returned with the Spaniards as a domestic animal.

Large creatures of the other classes were apparently less affected than the mammals. Great Pleistocene birds such as the whooping crane and the California condor prevail in remnant populations to this day, and many more primitive vertebrates, of which the sharks, sturgeons, sea turtles, and crocodilians are only the most spectacular examples, have persisted in their present form over many millions of years. For these, the slow wax and wane of the glacial epoch, which witnessed the emergence of mankind, was no more than a short season in the long history of their existence on the earth.

The last mastodons and mammoths were presumably hunted by man, who may have been hunted in his turn by *Smilodon*, the unsmiling saber-toothed tiger. It is very doubtful, however, whether the demise of these creatures at the dawn of the Recent epoch was significantly hastened by nomadic hunters of the Eskimo, Athabascan, Iroquoian, Siouan, and Algonquian races, the numerous tribes of which were wandering east and south across the continent. The red men were always few in number and, the Pueblo peoples of the Southwest excepted, left little sign of their existence. They moved softly through the wilderness like woodland birds, rarely remaining long enough in one locality to mar it.

The visits by Vikings, few records of which have come down from the Dark Ages, were transient also, and the forest green soon covered their crude settlements, leaving only a few much-disputed traces. These fierce warriors, whose sea-dragon galleys were the most exotic craft ever to pierce the North Atlantic fogs, had colonized Greenland by the tenth century and were thus the earliest white discoverers of the Western Hemisphere. That they also discovered North America by the year 1000 seems hardly to be doubted, and the Norse colonists of an ill-defined stretch of northeast coast were the first to record the resources of the new continent. In addition to the wild grapes for which the country was called Vinland, "there was no lack of salmon there either in the river or in the lake, and larger salmon than they had ever seen before," according to the chronicle of Eric the Red.[2] But they concerned themselves chiefly with the export of timber and fur, and in their murderous dealings with the Skrellings, as they called

the red men, established a precedent firmly adhered to in later centuries by more pious invaders from France, England, Spain, and Holland. The last Vinland colony, in 1011, was beset less by Skrellings than by civil strife; in the following spring, the survivors sailed away to Greenland, and the history of Vinland, brief and bloody, came to an end.

The modern exploitation of North American wildlife, then, commenced with Breton fishermen who, piloting shallops smaller still than the very small *Santa María*, were probably appearing annually on the Grand Banks off Newfoundland before the voyage of Columbus, and certainly no later than 1497, the year that Americus Vespucius and the Cabots explored Vinland's dark, quiet coasts. "The soil is barren in some places," Sebastian Cabot wrote of Labrador or Newfoundland, "and yields little fruit, but it is full of white bears, and stags far greater than ours. It yields plenty of fish, and those very great, as seals, and those which commonly we call salmons: there are soles also above a yard in length: but especially there is great abundance of that kind of fish which the savages call baccalaos." [3] The baccalao, or cod, abounding in the cold offshore waters of the continental shelf, formed the first major commerce of what Vespucius, in a letter to Lorenzo de' Medici, would term the New World; in its incidental persecution of sea birds, this primitive fishery was to initiate the long decline of North American fauna.

Though the Breton fishermen left no records, it must be assumed that they located almost immediately the great bird colonies in the Magdalen Islands and at Funk Island, a flat rock islet thirty-odd miles off Newfoundland. Since many sea birds, and especially those of the alcid family—the auks, puffins, guillemots, and murres—are of general distribution on both sides of the North Atlantic and nest on the rock islands of Brittany even today, these sailors were quick to recognize their countrymen. A concept of the plenty they came upon may still be had at Bonaventure Island, off the Gaspé Peninsula of Quebec, where the four-hundred-foot cliffs of the seaward face form one vast hive of alcids. The birds swarm ceaselessly in spring and summer, drifting in from the ocean in flocks like long wisps of smoke and whirring upward from the water to careen clumsily along the ledges. Above, on the crest, the magnificent white gannets nest, and the kittiwakes and larger gulls patrol the face, their sad cries added to a chittering and shrieking which pierce the booming of the surf in the black sea caves below. At the base of the cliff the visitor, small in a primeval emptiness of ocean, rock, and sky, feels simultaneously exalted and diminished; the bleak bird rocks of the northern oceans will perhaps be the final outposts of the natural profusion known to early voyagers, and we moderns, used to remnant populations of creatures taught to know their place, find this wild din, this wilderness of life, bewildering.

The largest alcid, and the one easiest to kill, was the great auk. Flightless, it was forced to nest on low, accessible ledges, and with the white man's coming its colonies were soon exterminated except on remote rocks far out at sea. The size of a goose, it furnished not only edible eggs but meat, down and feathers, oil, and even codfish bait, and the Micmac Indians were said to have valued its gullet as a quiver for their arrows. The greatest colony of garefowl was probably at Funk Island, where Jacques Cartier, as early as 1534, salted down five or six barrels of these hapless birds for each ship in his expedition. In 1536 an Englishman named Robert Hore improved upon old-fashioned ways by spreading a sail bridge from ship to shore and marching a complement of auks into his hold. Later voyagers, sailing in increasing numbers to the new continent, learned quickly to augment their wretched stores in similar fashion, not only at Funk Island but at Bird Rocks in the Magdalens and elsewhere. The great auk is thought to have nested as far south as the coast of Maine, with a wintering population in Massachusetts Bay, but the southern colonies were probably destroyed quite early.

As a group, the alcids have always been extraordinarily plentiful—the Brünnich's murre and the dovekie, which may be the most numerous of northern sea birds, each boast colonies in Greenland of two million individuals or more—and the great auk was no exception. The relative inaccessibility of its North Atlantic rookeries deferred its extinction for three centuries, but by 1785, when the frenzy of colonization had subsided, George Cartwright of Labrador, describing the Funks, was obliged to take note of the bird's decline: ". . . it has been customary of late years, for several crews of men to live all summer on that island, for the sole purpose of killing birds for the sake of their feathers, the destruction which they have made is incredible. If a stop is not soon put to that practice, the whole breed will be diminished to almost nothing, particularly the penguins: for this is now the only island they have left to breed upon. . . ." [4] Cartwright does not mention the complementary industry of boiling the birds in huge try-pots for their oil, an enterprise made feasible on the treeless Funks by the use of still more auks as fuel.

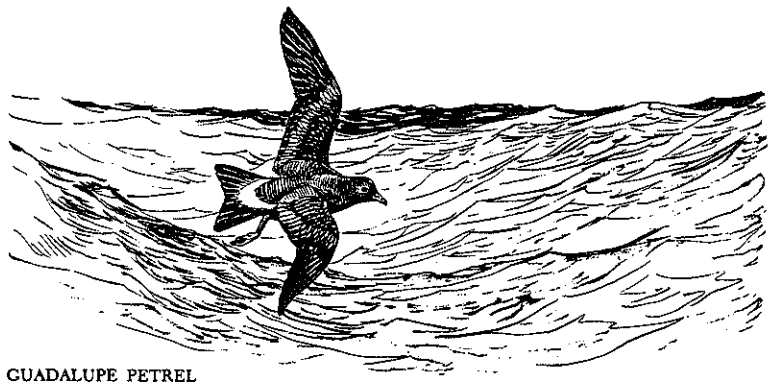
The naturalists of the period, unhappily, did not share Cartwright's

alarm. Thomas Pennant, writing in the previous year, makes no mention of auk scarcity, and Thomas Nuttall, as late as 1834, is more concerned with the bird's demeanor than with its destruction. "Deprived of the use of wings," he mourns, "degraded as it were from the feathered ranks, and almost numbered with the amphibious monsters of the deep, the Auk seems condemned to dwell alone in those desolate and forsaken regions of the earth. . . . In the Ferröe isles, Iceland, Greenland and Newfoundland, they dwell and breed in great numbers. . . ." [5] Though Nuttall pointed out, somewhat paradoxically, that recent navigators had failed to observe them, his contemporary, Mr. Audubon, was persuaded of their abundance off Newfoundland and of their continued use as a source of fish bait. In 1840, the year after Audubon's account, the auk is thought to have become extinct off Newfoundland, and two decades later Dr. Spencer F. Baird was of the opinion that, as a species, the bird was rather rare. His remark may well have been the first of a long series of troubled observations by American naturalists in regard to the scarcity of a creature which was, in fact, already extinct.

"All night," wrote Columbus, in his journal for October 9, 1492, "they heard birds passing." [6] He was already wandering the eastern reaches of the Caribbean, seeking in every sign of life a harbinger of land. The night flyers mentioned were probably hosts of migratory birds, traversing the Caribbean from North to South America, rather than native species of the Greater Antilles or Hispaniola. Columbus could not have known this, of course, nor did he suspect that the birds seen by day which raised false hopes throughout the crossing were not even coastal species, but shearwaters and petrels, which visit land but once a year to breed.

Certain shearwaters, storm petrels, and alcids are still very common in season off the Atlantic coasts, but it is no coincidence that the great auk and two species of petrel were the first North American creatures to suffer a drastic decline. The Atlantic islands, rising out of the endless fetch of the wide, westward horizon, were much frequented by ships, and often provided new ship's stores for the last leg of the voyage. Fresh meat was usually supplied by sea birds, incredibly plentiful on their crowded island nesting grounds; in temperate seas, the shearwaters and petrels, like the great auks farther north, were conscripted commonly as a supplementary diet.

In spite of local plenty, the bird communities of islands around the world are often early victims of extermination. The breeding range of island species is small and therefore vulnerable, and the species themselves may



GUADALUPE PETREL

be quite primitive. Some are relict populations of forms which, on the mainland, have long since succumbed in the struggle for survival. Other species, freed from competition and mammalian predation, grow overspecialized, diminished in vitality, and thus are ill equipped to deal with new factors in their environment.

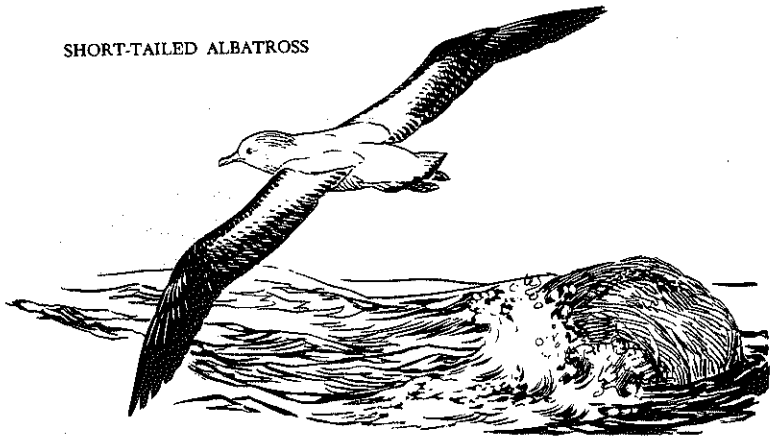
Man is invariably a new factor of the most dangerous potential. The fiercest animal of all, he is especially destructive when he introduces, in addition to himself, such rapacious mammal relatives as the rat, the mongoose, and the cat, all of them beasts superbly equipped to make short work of birds, eggs, and other edible life escaping the attention of their large ally.

The ship rat may have explored Bermuda as early as 1603. That year a Spanish crew under Diego Ramírez, frightened at first by the unearthly gabblings of myriad nocturnal spirits, discovered upon closer inspection that these evil things were birds, and highly palatable birds at that. The good impression of the Spaniards was confirmed six years later by a Mr. W. Strachey, shipwrecked in those parts with Sir George Somers on the *Sea Venture,** who wrote as follows:

> A kind of webbe-footed Fowle there is, of the bigness of an English greene Plover, or Sea-Meawe, which all the Summer we saw not, and in the darkest nights of November and December . . . they would come forth, but not flye farre from home, and hovering in the ayre, and over the Sea, made

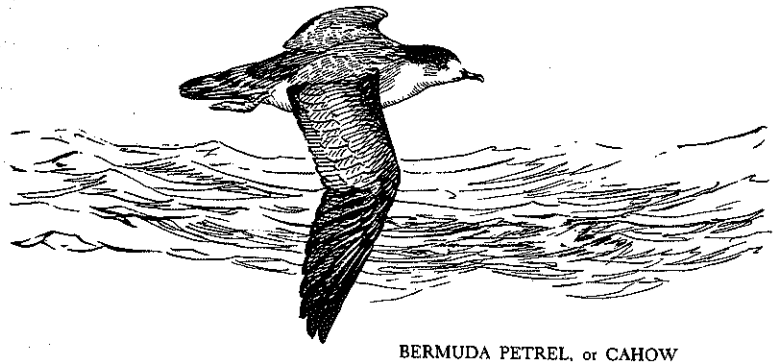
* The accounts of this shipwreck are said to have inspired Shakespeare's *The Tempest.*

SHORT-TAILED ALBATROSS



a strange hollow and harsh howling. They call it of the cry which it maketh, a cohow. . . . There are thousands of these Birds, and two or three Islands full of their Burrows, whether at any time . . . we could send our Cockboat and bring home as many as would serve the whole Company.[7]

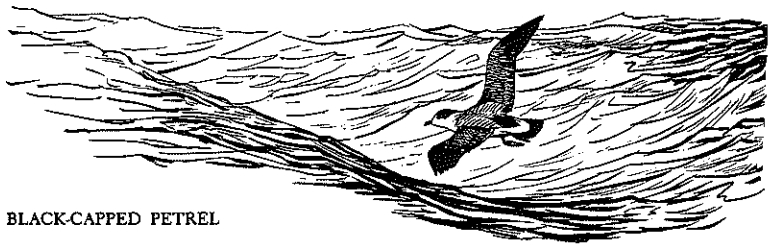
Strachey's implication that the nesting burrows were confined to a few islands—or more properly, islets—is significant, for the cahow, or Bermuda petrel, was the first New World example of a creature endangered by its narrow habitat. The cahow's original nesting range throughout the islands was doubtless restricted to the offshore rocks not long after the first sail broke the ocean horizons. In addition to man and his faithful rats, a number of hogs were turned loose in the Bermudas very early, and these are thought to have rooted out the colonies on the larger islands. Nevertheless, the cahow and the "pimlico," known today as Audubon's shearwater, remained abundant on the islets of Castle Roads and elsewhere, and it may have been the famine in the winter of 1614–1615 which brought about the final decline of the former. The following year, a proclamation was issued "against the spoyle and havock of the Cahowes, and other birds, which already wer almost all of them killed and scared away very improvidently by fire, diggeing, stoneing, and all kinds of murtherings." A law protecting the nesting birds was passed in 1621 which, to judge



BERMUDA PETREL, or CAHOW

from its results, was unavailing. About 1629, scarcely a quarter-century after the first accounts of it, the cahow disappeared entirely.

In the ordinary course of events, the cahow would have thus become the first North American species to die by the hand of man. (Bermuda is here considered an extension of North America, since it cannot be geographically allied to any other land mass and since, in this period, it was part of the Virginia Colony. For the purposes of this book, North America may be taken to include the continent north of the Mexican border, with its offshore islands and the oceanic islands of Bermuda, although the border is not a continental line, and is somewhat north of the vague faunal "boundary" which roughly separates the representative animals of the two Americas.) But the species was marvelously resurrected in 1906, when an unknown petrel was discovered in a Castle Island crevice. The bird at first was considered a new species, but three other specimens located in subsequent years closely fitted a description of the historic cahow constructed from antique remains. In 1951, some nesting burrows, occupied, were found on islets near Castle Roads. Carefully guarded, these burrows are nonetheless subject to the whims of rats as well as to confiscation by the yellow-billed tropic birds, and there is small hope that the cahow's stamina can maintain it another century. Less than one hundred individuals are now thought to exist, but the fact remains that the species managed to survive nearly three hundred years of supposed extinction. Its status as a "living fossil" cannot compare with that of the coelacanth which, first captured



BLACK-CAPPED PETREL

off South Africa in 1938, is a five-foot specimen of an order of fossil fishes thought to have vanished from the earth, not three hundred but three hundred million years ago. Nevertheless, the cahow's story is remarkable, and one must admire the persistence of the survivors. Scattered out across the great Atlantic, they have homed to their rock islets every autumn, year after year after year, to perpetuate their kind beneath the very shadows of the planes which fly man in and out of Bermuda's airfield.

Though remains have been found in the Bahamas, the former occurrence of the cahow off the coasts of the Atlantic States can only be presumed. Similarly, the Guadalupe petrel, first noted on Guadalupe Island off Baja California in 1887, has never been recorded elsewhere, though probably it ranged to California before cats left behind by transient fishermen apparently overpowered it. Little is known of its original distribution, and it is not likely that we will learn much more, the species having disappeared after 1912. The short-tailed albatross of the western Pacific, on the other hand, was sighted offshore commonly, from Alaska to California, until an Oriental market for its feathers all but finished it, and is therefore a member *in absentia* of our fauna.

The diablotin, or black-capped petrel, not only has visited our coasts but has journeyed far inland. This oceanic wanderer makes its nest in West Indian mountain burrows, and has turned up, usually after storms, in such unlikely haunts as Kentucky, Ohio, New Hampshire, Ontario, and Central Park, in New York City. As a significant food source for mankind, however, it has a history almost as dark and brief as that of its near-relative, the cahow. An account dating from 1696 refers probably to the diablotin in observing that "The difficulty of hunting these birds preserves the species, which would have been entirely exterminated years ago, according to the bad custom of the French, did they not retire to localities which are not

accessible to everyone."[8] Localities inaccessible to man, however, were readily accessible to mongooses and opossums imported to its islands, and as a consequence the species has all but disappeared. Its last nesting grounds are unknown, and the few sightings of this large black-and-white petrel in recent decades are largely of random individuals glimpsed on Columbus's western ocean. Columbus himself may well have seen it, and the ultimate record will doubtless be made from aboard ship. One imagines with a sense of foreboding this strange, solitary bird passing astern, its dark, sharp wing rising and vanishing like a fin as it banks stiffly among the crests until, scarcely discernible, it fades into eternities of sea.