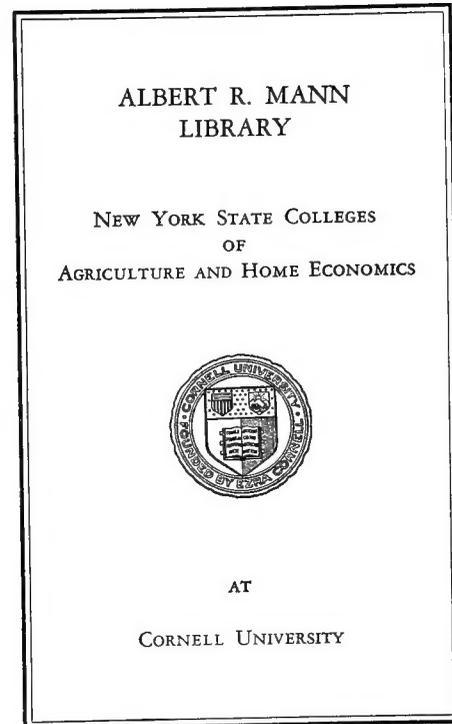


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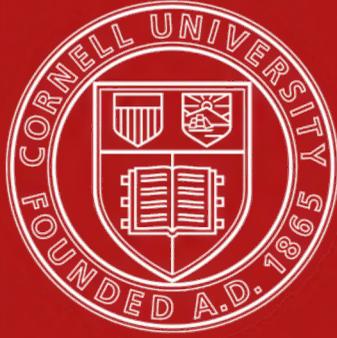
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British birds with their nests and eggs



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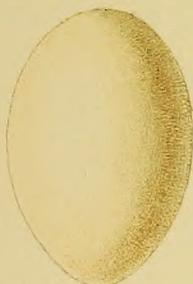
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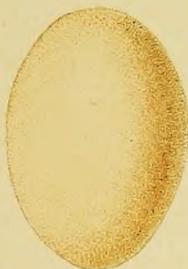
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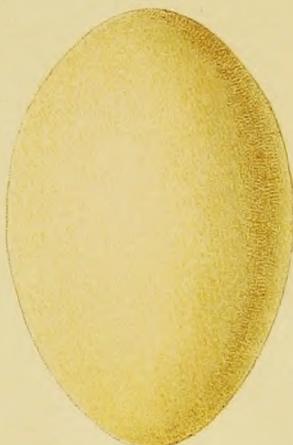
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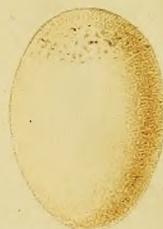
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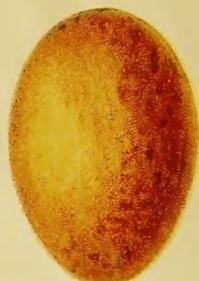
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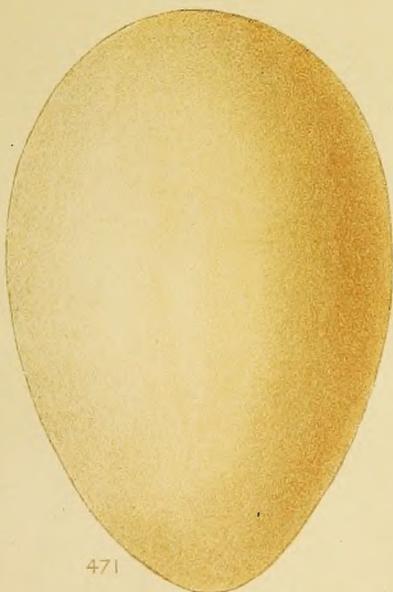
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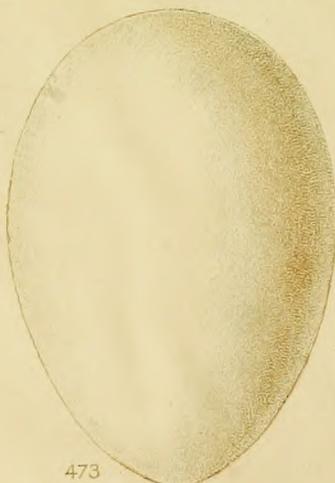
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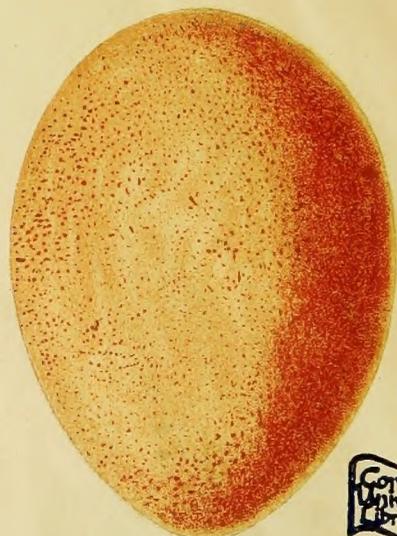
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J. W. Trohawk

FIG. 465 PUFFIN.

466 BLACK-THROATED DIVER.

467 RED-THROATED DIVER.

468 GREAT CRESTED GREBE.

FIG. 475 STORM PETREL.

FIGS. 469-470 LITTLE GREBE.

471-472 FULMAR.

473 MANX SHEARWATER.

474 FORK-TAILED PETREL.



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W. Trohawk Aug. 1898.

FIGS. 463—464 GREAT AUK.

*Sold by Auction 23rd April, 1895,
180 Guineas,
the property of Mr. T. G. Middlebrook.*

*Sold by Auction 13th April, 1897,
280 Guineas,
the property of Mr. T. G. Middlebrook.*



FIG. 457-462 GUILLEMOT.



FIGS. 448—449 KITTIWAKE GULL.
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FIGS. 421 GREENSHANK.
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BRITISH BIRDS

WITH THEIR

NESTS AND EGGS

IN SIX VOLUMES

ORDER GAVIÆ.

By HENRY O. FORBES, LL.D., F.R.G.S., A.L.S., M.B.O.U.,
AUTHOR OF "A NATURALIST'S WANDERINGS IN THE EASTERN ARCHIPELAGO," &c.

ORDER PYGOPODES.

By O. V. APLIN, F.L.S., M.B.O.U.,
AUTHOR OF "THE BIRDS OF OXFORDSHIRE."

ORDER TUBINARES.

By REV. H. A. MACPHERSON, M.A., M.B.O.U.,
AUTHOR OF "THE FAUNA OF LAKELAND," JOINT AUTHOR OF "FUR AND FEATHER," SERIES, &c.

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F. W. FROHAWK, M.B.O.U., F.E.S.

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BRUMBY & CLARKE, LIMITED,
BAKER STREET, HULL, AND 5, FARRINGTON AVENUE, LONDON, E.C.

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BRITISH BIRDS,

WITH THEIR NESTS AND EGGS.

ORDER GAVIÆ.

THE term Gaviæ, applied to the Order of birds to be described in the succeeding pages, and adopted from the occasionally used Italian word *gavia*, signifying a Gull, is now restricted to the two families containing the Gulls and Terns (*Laridæ*) and the Skuas (*Stercorariidæ*), although on its first application it included several additional groups.

These families form a very compact and easily recognized assemblage of birds, of which members of one or other of their genera must be familiar to every visitor to our coasts, lakes, marshes, or river estuaries; for they are found in all such situations in almost every country in the world in the summer (of their latitude) and not a few of them throughout the winter also. Their nearest relatives are the Plovers. Though externally not very similar to them, many of the *Laridæ*, the Terns especially, agree with them in many of their other characters, such as in the form of their wings, the colour of their eggs, and, chiefly, in their internal anatomy.

Without going into details of their internal structure, the Gaviæ may be easily recognized. They are water-frequenting birds, with sharp or coulter-shaped

beaks, long sharp wings, indicative of rapid and powerful flight, short legs, small feet and fully (instead of, as in the Plovers, partially) webbed toes. The tarsus is scutellated in front and reticulated behind. They possess an after shaft (or second smaller feather branching from the inner surface of the quill) to the body feathers; twelve tail feathers; one minute, concealed, and ten large primaries; and in the secondaries (or quills on the *ulna* or *cubitus*) a blank occurs between the fourth and sixth feathers (although the fifth upper and under coverts are present), an unexplained feature, from which those birds exhibiting it have been designated *Aquinto cubital*. The young on emerging from the egg are covered with down, and able to run about when a few hours old. The Gaviæ rarely lay more than three eggs, "spotted or scrolled with dark colours on a white, buff, or ochraceous ground" (Saunders).

The Terns, Gulls, and Skuas are distributed over all the seas of the globe, and on most of the great inland lakes of its chief continents. As a rule they assemble in vast crowds during the breeding season, innumerable nests being frequently found within some restricted and favourite area selected by them as their nursery for the year.

Many of them are migratory, coming to this country in the spring, and after breeding in the summer, returning in autumn to more genial quarters for the winter. Many also that winter far south of our latitude, are mere birds of passage at those seasons, their breeding places being still farther north than the British Isles.

The *Laridæ* are divided into three sub families: the Terns or Sea-Swallows (*Sterninæ*), the true Gulls (*Larinæ*), and the Skimmers, Cut-waters, or Scissors-bills, as they are variously named, (*Rhynchopinæ*). The first two subfamilies are abundantly represented in Great Britain; but none of the Skimmers (of which there are five species all belonging to the one genus *Rhynchops*) have even reached our shores. They are chiefly temperate and sub-tropical birds (inhabiting Africa, India, North and South America), remarkable for the peculiar form of the bill, which consists of two sharp blades, the upper half being freely moveable, while the lower and larger is vertically compressed to quite a thin plate.

The *Laridæ* may be distinguished from the *Stercorariidæ* (Skuas) by the absence of a cere, or bare soft skin, at the base of the maxilla, and of the strong hook to the beak, which are characters conspicuous in the Skuas. In the latter family the toes are always much more fully webbed and the claws larger and sharper than among the Gulls. Their breast bone also has only one notch in its broader margin instead of two, as in the Gull's sternum.

The *Laridæ* vary much at different seasons of the year in the colour of their plumage—some of them taking four to five years to attain maturity.

The Terns (*Sterninæ*) have been divided by Mr. Saunders—our highest and most recent authority on the Gaviæ—into the following eleven genera, to which fifty-one species have been referred.

1.—*Hydrochelidon*, or MARSH TERNS, with four species, of which three are recognized as having a claim to be included in the British list. They are small birds with grey plumage; the head with no prolonged gape-plumes; the tail slightly pointed and less than half the length of the wing; the bill less than twice the length of the tarsus, and their feeble feet having the long slender toes only half webbed. They derive their name of Marsh-Tern from nesting in marshes, on tussocks or floating vegetation.

2.—*Gelochelidon*, or GULL-BILLED TERNS, containing but a single species (which visits our shores), with a stout beak, without gape-plumes; the tail less than half the length of the wing, its outer feathers pointed and longer than the others; the tarsus exceeding the middle toe and claw in length.

3.—*Hydroprogne*, containing one species only, which is a visitor to our shores, with no gape-plumes; the bill very deep and stout; the tail less in length than one third of the wing, its outer feathers being pointed and longer than the rest; and the tarsus shorter than the middle toe and claw.

4.—*Sterna*, the SEA TERNS, embracing thirty-three species from all parts of the globe, of which seven have bred on or visited Great Britain, with no gape-plumes; the bill compressed and slender; the tail, its outer feathers pointed and exceeding the rest in length, never less than half the length of the wing, and the tarsus never exceeding the length of the middle toe and its claw.

5.—*Anous*, or NODDIES, of which there are only two species, probably reducible (on the acquisition of additional specimens from the Eastern Pacific) to one, with sooty plumage and grey head; the strong and decurved beak longer than the middle toe and claw; the graduated tail, with the fourth pair of feathers from the outside, exceeding the rest in length. The Noddies are essentially tropical birds, but two or three individuals in their wanderings have visited our shores, their visits separated by long intervals of time.

Representatives of the above five groups nest on, or have visited the British Isles; but no species of the remaining genera have yet been recorded from our area.

6.—*Phaethusa*, containing but one South American species, with no gape-plumes; the bill large, stout, and twice as long as the tarsus; the tail shorter than half the length of the wing; the webs of the feet only slightly indented.

7.—*Seena*, having also only a single river-frequenting species, confined to India and Malacca; without gape-plumes; the tail, with its outer feathers pointed

and longer than the rest, more than three-fourths the length of the wing; the tarsus shorter than the length of the middle toe and claw, and the bill very stout.

8.—*Nania*, embracing one aberrant species, the INCA TERN, from the coasts of Peru and Chili; with conspicuous gape-plumes; the bill strong and decurved; the tail slightly forked, with its two outer feathers of about equal length.

9.—*Procelsterna*, containing two species confined to the Western Pacific, with grey plumage; the tail graduated and its two outer feathers shorter than the inner pair next to them, which are the longest in the tail; the foot long, its middle toe and claw exceeding in length the ridge of the beak.

10.—*Micranous* embracing three tropical species, with the bill long and slender; the tail graduated, with its third pair of feathers from the outside longer than the rest.

11.—*Gygis*, containing two species, almost restricted to the coral islands of the southern hemisphere, with bill stout and pointed, broad at the base and tapering upwards in front; tail graduated; toes long and slender, with deeply incised webs, the midmost toe being specially long. These beautiful pure white birds lay their single white egg in the clefts between the leaflets of the cocoanut palms, on the cavity of a branch of a tree, on a flat board, or “anywhere where it will lie” as Mr. Saunders well observes.

The Terns may be distinguished from the Gulls by their straighter and more slender bill, with mandibles of equal length, and their more or less forked tail. They are found in all parts of the globe, some nesting by the sea-shore, others in marshes, or by the sandy banks of rivers, not infrequently thousands of miles inland.

From their forked tail, long pointed wings, swift flight, and graceful action while feeding from the surface of the water, they have derived, doubtless, the very appropriate name of Sea-Swallows, by which they are generally known.

Terns, as has been stated above, are able to run about very soon after emerging from the egg, and are, at that stage of their existence, covered with down. In a few weeks this cradle covering is exchanged for their first immature—a more or less barred and mottled with blackish-brown—plumage, which, from the first autumn through the next spring and summer, loses (by fading of the colour and wearing of the feathers) more and more of the bars and mottlings, while during the same period acquiring a few dark feathers in the head, and will be replaced in the following autumn by the bird's first winter plumage, and finally in its second spring by its first nuptial dress. Every succeeding year the summer (or breeding) plumage, on moulting at the end of July or beginning of August, changes into a less ornate, or winter garb, thus completing the cycle of the Tern's

plumage changes. Many species, however, appear to be capable of breeding before they have assumed their fully mature plumage.

The *Larinæ* are divided into seven genera, among which the fifty-four recognized species are relegated:—

1.—*Xema*, containing two species (circumpolar in habitat in summer, but ranging beyond the tropics in winter), with long wings, forked tail, and the hind toe free and very small. One of the species is recorded from Britain.

2.—*Rhodostethia*, in which only one—a circumpolar—species is included, at once characterized by its wedge-shaped tail, the two central feathers being nearly two inches longer than the others, a character unique among the Gulls.

3.—*Larus*, embracing, according to Mr. Saunders' latest investigation of the group, forty-four species (a dozen of them being either resident in, or visitors to the British Isles), having the tail square; the bill, with linear nostrils, three times as long as it is deep; the hind toe free and well developed, and the lower third of the leg bare. In some species the mature birds assume a dark head in the breeding season; as a rule, however, dark feathers, or a speckled plumage, indicate immaturity.

4.—*Gabianus*, containing a single Australian species, resembling in outward appearance the Great Black-backed Gull, with a stout and compressed bill, of which the length is less than twice the depth.

5.—*Leucophæus*, containing one species, inhabiting southern South America and the Antarctic Islands, with the hind toe joined to the inner by a rugose membrane; the feet coarse, strong, and their webs considerably indented; the bill very short and obtuse (Saunders).

6.—*Rissa*, the KITTIWAKES, numbering two species, with an arctic summer habitat, extending in winter into sub-tropical latitudes; having the hind toe very rudimentary, or absent, though occasionally not ill developed; the tarsus very short compared with the middle toe and claw; the bill peculiarly curved; the tail *slightly* forked; the plumage of the immature bird quite unlike that of the adult, or of the young of other species of the subfamily; they nest invariably on precipitous rocks.

7.—*Pagophila*, containing a single representative, the IVORY GULL, with the bill short and stout; the feet coarse, rough with serrated membranes, much excised webs and strong curved claws (Saunders); the hind toe joined to the inner toe on the inside of the foot by a serrated membrane. The Ivory Gull has a circumpolar habitat.

The true Gulls (*Larinæ*) have the bill with its upper mandible longer than, and bent down over the tip of, the lower; the tail square, rarely forked or wedge-shaped.

The changes from youth to maturity take a longer time for their accomplishment among the Gulls than among the Terns. As among the latter the nesting plumage is succeeded in a very short time by the garb of the year, which is changed by moult in each spring and autumn, till the final and perfect plumage of the species is donned, in, among the larger members of the family, their fourth or fifth year, although some of the smaller Tern-like species may be in fully mature dress after the second spring moult.

“Even in those species,” as Mr. Saunders points out, “which are destitute of hood at all seasons, there is a seemingly endless variation in the pattern of the primaries, the general tendency being to an increase in the lighter and a diminution in the darker portions of the webs with the advancing age of the individual—a rule which also holds good with many of those species the adults of which bear a hood in the breeding season, whilst on the other hand, there are others which exhibit the apparent anomaly of having a hood in the immature stage and losing it in the adult plumage.”

The *Stercorariidæ*, the SKUAS, DUNGHUNTERS, or BO’SUNS (as they are more popularly known), differ from the *Laridæ* in their general appearance, habits, and structure. The robber instincts, with which they are so strongly endowed, have made them special objects of observation. Their aerial bullying pursuit of the Terns and weaker sea-birds (who with terror stricken screams attempt to escape by vigorous flight, but are rarely successful without having to disgorge—which is the object of the Skuas’ attentions—the results of the recent fishing forays from which they are returning), never ceases to be a spectacle followed with the most absorbing interest by everyone who has the opportunity of watching these relentless pirates in their native haunts. The term “Dunghunters,” from which they have obtained their general generic appellation *Stercorarius*, has been applied to them from the erroneous notion that that is the object of their pursuit of Terns and other sea-fowl, instead of its being the fish with which the birds are gorged.

There are seven recognized species of Skua included under the two following genera:—

1.—*Megalestris*, or GREAT SKUAS, containing four species, of which one, breeding in Britain, inhabits the subarctic regions of the northern hemisphere in summer, and its temperate latitudes in winter; and three have an antarctic habitat, ranging northwards to the extremities of the great southern continents in winter.

2.—*Stercorarius*, or LESSER SKUAS, embracing three species (one of which visits and one breeds in the British Isles), whose home is the arctic or subarctic regions, whence in winter they wander southward on all the continents, across the equator far into the southern hemisphere.

Stercorarius may be distinguished from *Megalestris* by the smaller size and slenderer bodies of the birds; by the depth of the bill being less than the length of the cere; the tarsus markedly less than, instead of subequal to, the middle toe and claw, and in having the central tail feathers three to four inches, instead of half an inch, longer than the rest

The young of the Skua emerges from the egg as a downy nestling, which in a few weeks, on becoming fledged, assumes a garb like its parents, but with bars and mottlings of a lighter colour. After becoming adult, Skuas show little seasonal change.

In compiling this account of the present state of our knowledge of the British Gaviæ, we have to acknowledge our great indebtedness to the writings (including correspondence) of Mr. Howard Saunders, the highest European authority on this group, which we have often laid under liberal contribution.

HENRY O. FORBES.

ANNA FORBES.

Family—*LARIDÆ*.

Subfamily—*STERNINÆ*.

BLACK TERN.

Hydrochelidon nigra, LINN.

THIS beautiful Marsh Tern was at one time a regular British breeding bird. It nested as late as the second decade of the century, in immense colonies in the broads of Norfolk, in the Kent and Lincolnshire marshes, and in various other parts of the South of England. The last year in which the Black Tern is known to have nested in England was 1858; and previous to that, after a long lapse, in 1853, owing to extensive areas of country remaining in a semi-bogged condition, after the great floods which had deluged large tracts in Norfolk in the previous winter.

The draining of the fen districts and the spread of cultivation have deprived these fresh-water nesting species of their former nurseries. Now they have, in consequence, deserted our shores during the interesting season of incubation, and visit us only during the spring and autumn, when going to and returning (on their way to warmer latitudes) from the lands where, undisturbed, they have brought forth their broods. Such quiet spots are found in Sweden, Russia, Germany, and other parts of Europe, as also in the southern parts of Canada and Alaska.

The breeding range of this Tern in the eastern hemisphere may be roughly demarked by the 25th and the 55th parallels of north latitude, as far east as the 90th meridian. In winter the birds from this region migrate southward down both coasts of Africa. In the western hemisphere the range may be stated as between the 35th and 55th parallels across the continent from sea to sea; extending on migration as far, on its eastern side, as the West Indian Islands and the north-eastern shores of South America, and along the Pacific coast as far as Chili.

During the migratory season, it is found more frequently on the south-west than on the south-east coasts of England; although in April and May it is not uncommonly to be seen off the coasts of Sussex and Kent, while specimens are recorded from many other parts of the coast.

The Black Tern is a rare—generally autumn—visitor to Scotland, and a still rarer to Ireland.

In their various plumages both sexes are alike at the same age. In the breeding or summer plumage, from which the females differ only in their slightly paler hue, the male has the head, neck, breast, and underside black; the mantle,



♂ JUR.

BLACK TERN ♂ 4

SUMMER

the upper tail-coverts, the tail and wings slate-grey; the edge of the wing paler; the primary shafts dull white, the webs dark slate-grey, except when new and unworn; the thighs, the under tail and under wing-coverts, white; greater under wing-coverts and axillaries pearl-grey; bill black; feet reddish-brown. Total length $9\frac{1}{2}$ inches; wing $8\frac{1}{2}$; middle toe and claw $\cdot 85$; tarsus $\cdot 6$ inch.

The Black Tern is one of the earliest to make its appearance every year on our coasts and river valleys, for a week or two in April and May, on its return from its warmer winter retreats on its way to its breeding quarters; and considerable numbers may then be seen together—in incipient summer plumage—hawking over rivers and marshes for flies and other winged insects like Swallows, or dropping suddenly down out of the air, Gannet-like, and deftly picking from the surface of the water minnows, small fishes, worms, or other morsels of food. Finding no undisturbed spot within our bounds, as they once did, to rear their young upon, they make but a short stay with us, and growing every day more and more into their nuptial attire, they hurry on their way to the suitable and safe quarters, which the countries to the north and east of us afford, to undertake their parental duties. These duties over, the parents—generally preceded by the young of the year—pay us, in the autumn, on their way back again to the more genial south, a somewhat longer visit than in the spring. The Black Tern rarely makes its nest on the sea coast; it is a fresh-water-loving bird, and builds in large colonies in reed-covered inland marshes where its nest, composed of vegetable *debris* piled together to form a fairly large structure, is placed on water-surrounded clumps of fixed vegetation, or occasionally on accumulations of pond material floating on the surface.

It rarely nests before the end of May, and in some localities it may not begin for even a month or six weeks later. Never more than three eggs are laid (in size about $1\frac{1}{2}$ inches long by 1 inch, or a little more, in diameter), with a ground colour varying from deep olive or pale chocolate to greenish-grey or buff, covered with black or umber, often confluent, blotches, scattered dots, or convoluted streaks, generally forming an irregular belt round the larger end. No part of the egg is free from markings. Dr. Coues has recorded that he saw a colony breeding on the Red River in North America, and found the eggs placed on masses of floating vegetation of the previous year's reeds, and that they had to be carefully searched for, as they were "laid directly on the moist matting without any nest in any instance, and readily eluded observation from their similarity in colour to the bed of reeds they rested on."

After about three weeks incubation, the chicks emerge covered with soft down of a reddish-brown colour, with the head, wings, and back marked with black;

the throat sooty and the under surface buff. In a short time the chick becomes fully fledged, and appears in its first complete feathering, which differs from the summer vestment described above, in the forehead, a ring round the neck, the margin of the wings, and the entire under side being white, or greyish-white; a bar through the eyes, the back of the head and nape blackish-brown; the mantle, the scapulars, and the lesser upper wing-coverts blackish-brown (from the grey plumage being margined with this colour); the rest of the upper side and of the wings slate-grey, margined with brown and white. The bill brown, its base pinkish-white; and the tail less forked. Altogether the birds have a general immature look. Before they finally leave our shores on their way to their winter quarters, many of the young birds show a tendency to lose the brownish colour and become greyer.

By next spring a great deal of the bars and mottling is lost, and these birds, as may be seen during their stay on their first northward migratory passage, have become very similar to their maturer fellows; the head, neck, and breast being black, but the belly shows more or fewer black feathers amid the white, the latter decreasing with the age of the bird, while the upper side only differs by a dark line along the edge of the wing.

This immature plumage remains till the autumn. When their first winter dress—which is very different from that of the summer—is assumed, the forehead, neck, throat and collar are white, speckled with black; the back of the head, the nape and round the eyes black, with pale margins; the breast and belly white, variegated with black (the amount varying with the stage of moult); the shoulders and margins of the wing greyish-black.

In the following spring these Terns appear, after their second true moult, in their first nuptial dress, and being about twenty months old, they have mated or will soon do so, and are about to begin the duties of incubation. In the succeeding autumn, when again on our shores on passage to a more southern latitude for the winter, they are completing the change—which will annually come over them—from their summer to their winter plumage.

The food of the Black Tern consists of insects of all kinds which, like most of the Marsh-Terns, it captures on the wing; of small fishes, or other aquatic life which they plunge into the water to secure. They are constantly to be seen, as Dr. Elliott Coues has graphically described in his "Birds of the North West," "hovering over the marshes in airy troops, fluttering hither and thither like so many Swallows or Night-Hawks, busily foraging for insects. These fall arrivals were chiefly young birds; and of the old ones, none were seen wearing the breeding dress, which, therefore, must be early laid aside. These Terns, like the

other smaller species, but just the reverse of the larger kinds, are perfectly familiar, or rather heedless, at all times. In the spring, at their breeding resorts, they dash down to an intruder, repeating with angry vehemence their shrill *crik, crik, crik*; in the fall, when nearly silent, they are equally regardless of approach, often fluttering within a few feet of one's head and then sailing on again, in the manner of Swallows. The flight is buoyant in the extreme and wayward, desultory, uncertain; perhaps no bird of this country has so great an expanse of wing for its weight, and certainly none fly more lightly. In hovering along on the outlook for insects, they hold the bill pointing straight downward, like others of the family. In the spring I have observed them plunging, like other Terns, into the water for food, probably small fry; but in the fall they seem to feed chiefly on winged insects, which they capture like Night-Hawks, as noted above."

Mr. C. A. Wright, to whom ornithologists in Europe generally are indebted for many notes on Mediterranean birds, especially those of Malta, has some interesting observations on this species in the "Ibis" of 1874. A large number of Black Terns were observed at the end of July, 1870, frequenting the harbour, and on the 6th August "I found them," he says, "in abundance fishing in the New Harbour extension, which was at that time pretty free from shipping. I saw none in the black plumage of summer; all were more or less marked with grey and white. I shot six, the average measurement being from $9\frac{1}{2}$ to 10 inches in length—the larger specimens being males, as is always the case with the different species of the Tern family; length of wing $8\frac{1}{2}$ inches. It was exceedingly interesting to watch their light and airy movements; now dropping suddenly from their airy altitude, splashing the water like a falling stone in pursuit of some small fish or offal that had attracted their attention, now coursing through the air, in imitation, as it were, of the Swallow tribe. In many parts of the New Harbour were placed floating corks to mark certain spots where mines had been laid to blast the rock at the bottom, in order to deepen the anchorage. On most of these corks was to be seen a solitary Tern, quietly watching for some passing fish to seize it for its prey. They showed no fear of approaching boats. I amused myself for some time with one little fellow, by pulling my skiff to windward and allowing it to drift down towards him. He never moved until I had almost touched him with my hand, and then only to mount a few feet in the air over my head, and alight on the same cork the instant that I had passed. This experiment I repeated several times with the same result. Occasionally, while within a few inches of him, he would exchange calls with a passing companion. The note was rather a shrill scream. So close did he allow of my approach that I could watch the expression of his dark bright eye; but there was nothing of

alarm in it. May be one reason for its loathness to abandon this particular cork was the presence of a small fish, which he had captured and laid at his feet, and his not wishing to renounce so good a chance of a meal. Taking up the fish to examine and carefully replacing it, I had no sooner done so than my little friend immediately recovered his stand on the cork. So much fearlessness and confidence were enough to touch even a collector's heart, and nothing could have induced me to repay them by injury."

"The minute insects," as Mr. Booth records, "that collect in swarms over the broads and swampy pools in the marshes in the east of Norfolk, prove a great attraction to this species on their first arrival in that part of the county. Small parties are to be met with every season, and occasionally I have watched flocks of from fifty to sixty birds engaged in hawking for prey like Swifts; at times they hover over the slades and water dykes after the manner of a Kestrel, or flap across the flooded portions of the hills with much the same actions as the Marsh-Owl, dipping down now and then for food. On the 28th of April, 1883, with a cold wind blowing from east-south-east, they were generally numerous, and a great difference in the shades of the pale grey colouring of the wings was remarked, some being so light that those who had never met with an opportunity of observing the White-winged Black Tern [*Hydrochelidon leucoptera*] in life, might readily have been mistaken as to the species. Small parties as well as single birds are often seen during the summer months resorting to the Norfolk Broads, and remaining for several days or even weeks in the district; these stragglers seldom exhibit perfect plumage, and are probably birds of the previous year and non-breeders."

In his recent, very interesting work, "A History of Fowling," the Rev. H. A. Macpherson states that the Tuscan Fowlers capture large numbers of Terns as they pass along the coasts of Italy on their northern spring migration. "It is chiefly in the month of May," he says, "that these slender and graceful birds appear in the marshes of Lucca, Pisa, and other districts of Western Italy. The engine employed for the capture of these birds is the ordinary clap-net, which is extended on the margins of the ponds and marshes which these birds visit in flocks. The birds are allured into the nets by the employment of captive individuals, which are fastened to the ground. As many as thirty and even forty birds are sometimes taken at a single pull of the net. The species which supplies the bulk of the victims is the Black Tern (*Hydrochelidon nigra*). The rarer White-winged Black Tern (*Hydrochelidon leucoptera*), and even the Whiskered Tern (*Hydrochelidon hybrida*) are subject to the same miserable fate Four Black Terns are sold as a bunch for two soldi. Many, again, are hawked about the streets in a living state, in order that they may be sold for young girls to use as playthings."



WHITE-WINGED BLACK TERN

WINTER PLUMAGE
SUMMER PLUMAGE

Family—*LARIDÆ*.

Subfamily—*STERNINÆ*.

WHITE-WINGED BLACK TERN.

Hydrochelidon leucoptera, SCHIINZ.

THE White-winged Black Tern in its summer plumage is a very distinct species, and easily recognized from other Terns; but in its immature and winter dress it might easily be mistaken for more than one species. It has occurred in the British Islands, chiefly in England. It has been recorded from seven or eight counties, especially those on the southern and eastern coasts, though it has more than once been taken in Northumberland and Yorkshire. It has not yet been recognized in Scotland. It was in Ireland, however, that it was first observed and identified, the specimen having been killed "near the Pigeon-house Fort, Dublin Bay, in October, 1841."

This species breeds all over Southern and Central Europe, as far north as latitude 55°, eastward across Central Asia to (but not further than) China. In winter it migrates southward down throughout Africa, and through Asia across the Malayan Islands to Australasia. It is unknown, except for a couple of accidental occurrences, in the western hemisphere.

Both the male and the female in breeding plumage have the head, neck, upper back (which are glossy), under side, flanks, under wing-coverts and axillaries all deep black; the lower back and rump greyish-black; lesser wing-coverts, vent, upper tail-coverts and tail pure white; the greater wing-coverts, the secondaries (which are darker) and the white-shafted primaries (when unworn) pearl grey; the webs of worn primaries black; the inner webs of the four outer quills with a well marked narrow whitish streak down the centre; bill dark red; legs and feet scarlet; toes with much indented webs. Length 9·3 inches; wing 8·2, tarsus ·75, and middle toe with its claw 1 inch.

Like the previous species, the White-winged Black Tern is a marsh Tern, and in its habits, food, and mode of nesting, the two are almost identical. The two species often unite in one colony, and make their nests close together in some inland marsh, although our present species may also be found occupying a locality apart from other Terns. Its nest is placed in the very same kind of situation as the Black Tern's, and the eggs of the two, three in number, laid at the end of

May or early in June, are inseparable by size or colour. Mr. Booth saw this species, in the Norfolk Broads, hawking, in company with thousands of Sand Martins, across the surface of the water, and during a whole afternoon kept up their pursuit of insects in precisely the same manner as the Martins. Small fishes and aquatic animals constitute additional items of this bird's food. Maggots have also been found, on dissection, in its stomach.

The plumage-changes that the White-winged Black Tern undergoes, after leaving the nest till it attains maturity, take place in the same manner and at the same seasons as in the last species.

The nestling on issuing from the egg, about the beginning or middle of July, is covered on the upper side with a yellowish-brown down, mottled with black, and is of a uniform pale cinnamon-brown beneath. In a few weeks the down is succeeded by the bird's first plumage, in which the forehead, sides of the neck, rump, under wing-coverts and all the lower surface are white; the crown, nape of the neck, and a spot on the ear-coverts, are brownish-grey, or mottled with black; "the mantle, the scapulars and the wing-coverts dark slate-grey, with buff margins and brown sub-margins" (Seebohm); after the spring moult, the back, the scapular region, the upper tail-coverts and the tail feathers are pearly or slate-grey, tipped or mottled with brown of lighter or darker shades; primary-webs darker than in the adult; bill brown. After the first spring and during the bird's first summer, the brown-tipped feathers of the upper surface as just described pass gradually away, chiefly by a change of colour, though a few feathers perhaps moult, leaving only the margin of the wing mottled; the black of the under side shows a brownish tinge, and the tail, especially towards the tips, is grey. The rump, between the grey back and grey tail, is white

With its first autumnal moult is assumed the winter garb of this species, which is described as follows by Mr. Howard Saunders:—"in the latter part of July, when the moult begins (in Europe), the bird is curiously parti-coloured, the new feathers of the head, neck, and under parts being white, and those of the back grey; the adult birds have white tails, but in the immature ones it is grey, which serves to distinguish them. Later, the under parts, including the under wing-coverts and axillaries, become white, the crown of the head and the nape being merely mottled with black; but by the following April the black colour has reappeared to a considerable extent, especially on the axillaries"—the next spring moult bringing the Tern into its full nuptial dress. The tail-feathers may remain for several seasons of a greyish, instead of a pure white.

The present species is distinguished from the Black Tern at all seasons by its longer and more slender toes and claws, and the deeper indentations of the



WHISKERED TERN ♂ SUMMER

webs. Immature birds have always the white rump, which in *H. nigra* shows grey continuously from the back to the tail. The full summer plumaged bird on the wing can scarcely be mistaken for any other species; its white wings are a sufficiently conspicuous mark on the upper surface, while seen from beneath the black under wing-coverts distinguish it from the Black Tern, whose under wing-coverts are grey.

Family—*LARIDÆ*.

Subfamily—*STERNINÆ*.

WHISKERED TERN.

Hydrochelidon hybrida, PALL.

THIS Tern, which derives its name from the line of white which runs from the base of the upper mandible below the eye to the ear-coverts, is a very rare visitor to our shores. It has been seen or taken only a few times, more often in the south-western than in the other counties of England. A specimen shot in 1836, in Dorsetshire, was the first British record; four or five other occurrences complete the tale of English specimens. It has been taken, though very rarely, both in Scotland and in Ireland.

The Whiskered Tern is found in summer across the whole of Europe and of Asia (except Formosa) below 55° N. latitude. In winter it migrates through the Malay Archipelago into Australia as far as 35° S. latitude, and throughout Africa to the Cape of Good Hope. As it has been recorded from the Orange Free State in full breeding dress in December, flying over reed-pans, it may be presumed that some individuals remain resident in South Africa, naturally assuming the breeding dress in the summer of their latitude.

As seen on the wing the upper parts are slate-grey, the under side white, and the nape black. The adult male and female are alike, except that the latter is slightly paler. In breeding garb they have the crown of the head, nape of the

neck, the flanks and the abdomen deep black; the forehead, the sides of the face and neck, the axillaries, the vent, the under tail- and under wing-coverts white; the whole of the back, the rump, the upper tail-coverts, the tail, the wing-coverts and the throat varying from grey to slate-grey; the chest and breast darker. The white-shafted primaries dark slate-grey (except when quite unworn and "frosted"); the "inner webs of the outer pairs of primaries white on the upper and greater part of the inner webs" (Saunders). Bill dark red; feet scarlet, fading after death to orange. Length $10\frac{1}{2}$ inches; wing 9.3; tarsus .9.

The Whiskered Tern may be looked for, in England, in the early summer, when it is on its northern migration to its breeding stations, and again in the autumn when on its return southward to its winter quarters.

Like the other Marsh-Terns, the Whiskered Tern builds in large colonies in inland lakes, ponds and marshes; constructing a nest similar to that described under the two preceding species. This Tern will, however, sometimes not take the trouble to make a nest of its own, but will, as Canon Tristram observed in Algiers, occupy, as a colony of them were doing on the large lakes there, the nests of another bird—the Eared Grebe—just as they had been shortly before left by the young of their builders. Mr. Anderson has given an interesting account of the breeding of this bird in Fyzabad, in July, 1867. . . . "We had hardly gone beyond the town," he writes, "when our attention was attracted by the outcry of a vast assembly of these handsome Terns, that were flying over a gheel or swamp, about a mile in circumference and within a stone's throw of the main road and of a village which overlooked the piece of water. My friend, who had a pair of glasses in his hand, called out that they were building nests on the swamp, which was one mass of tangled weeds and aquatic creepers, etc. . . . We were, however, soon assured that they were all actively engaged in carrying long wire-like weeds (some of them two feet long) from different parts of the gheel, and making huge floating nests on the surface of the water. On the 7th July we again visited the place, taking a small canoe with us The circumference of some of the nests I measured ranged between $3\frac{1}{2}$ and 4 feet, and they were about 4 inches thick. They were composed entirely of aquatic plants, and so interwoven with the growing creepers that it was quite impossible to remove them without cutting at the foundation of the structure.

"The eggs, as may be expected, are subject to the same endless varieties as those of the *S. hirundo* (Common Tern) and *S. arctica* (Arctic Tern), but differ in being smaller, less pointed, and in the general colour being much lighter."

Canon Tristram notes that the Whiskered Tern remained through the winter and spring in small flocks on the Sea of Galilee, till the birds acquired their

breeding plumage, when they retired to the marshes of Huleh for nidification—the only species in the country remaining to breed. “The Sea of Galilee,” he says, “is remarkable for the vast numbers of Grebes, Gulls and Terns which cover its surface in winter and early spring, while after April not a solitary example of a Natator can be detected. Well may birds swarm there, for the shoals of fishes are almost incredible. Masses of fishes, covering an acre or two, may be seen with their back fins above the water, looking, as they move slowly in serried ranks, like the pattering of a heavy shower on the lake. Why all the birds disappear in May can only be accounted for by the absence of any secure breeding places near the lake, the shore being open, destitute of trees, marshes, or other cover, and on the east side forming a long bare range of bleak hills which come almost down to the water’s edge.”

Dr. Sharpe gives the “prevailing ground colour of the eggs, as greenish-grey, sometimes clay-colour, the markings being similar in character to those of the allied Terns, but rather more scattered and distinct, while in some examples the spotting and scribbling is very minute, and the underlying grey spots are more distinct than in eggs of *H. leucoptera*.”

The eggs vary in length from $1\frac{1}{8}$ to $1\frac{1}{2}$ inch, by about $1\frac{1}{2}$ inch in diameter, and are slightly larger than those of the two already described Marsh-Terns.

The eggs are laid about the middle of May, and the young are hatched towards the end of June. The nestlings are sandy-yellow on the upper surface, mottled, striped, or spotted with black; beneath they are white, with the throat sooty black.

In its first plumage, as given by Mr. Saunders, the Whiskered Tern has the forehead white; the crown and nape of the neck blackish-brown; the upper parts pale grey; the mantle mottled with brown and with warm cinnamon-brown edges to the inner secondaries; tail slightly mottled and edged with ash-brown; the under side white; bill and feet reddish-brown. The larger size of the birds at this stage distinguishes them from the young of *H. leucoptera*.

Before the beginning of the following year the brown markings have become greatly reduced, and after the spring, when a pigment change, or partial moult, takes place, the forehead and crown are seen to be white, the rest of the head and neck, and also the ear-coverts, greyish-black; the back, shoulders and secondaries slate-grey, strongly blotched with blackish-brown in the middle and tipped with buff; the entire under side white; the tail feathers grey, margined with white; the bill brown, red at the base, and the legs and feet reddish-brown.

The first entire moult takes place in the second autumn, when the first winter plumage of the bird is assumed, which is paler on the upper side than in the

adult summer garb; the forehead and under side are white; the crown and the nape of the neck mottled with black; the feathers of the shoulders, the inner secondaries, the tips of the wing-coverts and of the tail brown, with pale margins; bill and feet reddish-brown. The adults in winter differ from the immature birds here described, by wanting the brown on the shoulders, wings and tail.

The Whiskered Tern, in regard to its food and the manner of capturing it, differs little from the other Marsh-Terns. It lives chiefly on insects, dragon-flies, grasshoppers, etc., taken on the wing, and small fishes, frogs and newts pounced upon in shallow water.

Family—LARIDÆ.

Subfamily—STERNINÆ.

GULL-BILLED TERN.

Gelochelidon anglica, MONT.

ALTHOUGH this Tern has never been but a rare visitant to Great Britain, and is abundant on the Continent, it was, strange to say, first described as a distinct species from a specimen shot in the county of Sussex, by that keen and accurate naturalist, Colonel Montagu, who described it in 1813, in the Supplement to his "Ornithological Dictionary,"—the excellent and not unworthy forerunner of that erudite compendium of Ornithology "The Dictionary of Birds," by Professor Newton. It was at first considered to be a specimen of the Sandwich Tern—a species which had been described for the first time by Latham, in 1785, from a bird shot near Sandwich; but Montagu's coming into possession of one of the type specimens of that bird, given him by his friend Mr. Vaughan, to whom it had been presented by Dr. Latham, and his placing the birds side by side, occasioned "the fortunate discovery that a distinct species, apparently more common [than the Sandwich Tern], has been erroneously considered to be that



♂ JUR.

GULL-BILLED TERN ♂

SUMMER

bird." The species, "from the shape of the bill" [in which the angle at the union of the two halves of the mandible is prominent], continues Montagu, "is denominated Gull-billed Tern, a prominent character of distinction between the two; and as it has originated in England we have added the more scientific name of *Sterna anglica*."

As a matter of accuracy, however, this Tern was first discovered by the naturalist Hasselqvist, on the banks of the Nile during his travels in Egypt.

"One specimen of this species," observes Montagu, in his original account of it, "we shot in Sussex, and have known others to have been killed about Rye." Since then nearly a score of individuals have been shot in England, chiefly in spring and autumn—the majority of them in Norfolk. No specimens have as yet been recorded from Scotland or from Ireland.

Of these visitors to our shores, one dropped a fully formed egg when shot, another had well developed eggs in its ovary on dissection, and a third was in full breeding plumage, so that it is not improbable that it may yet be found breeding in this country.

This species, which is much more a Sea- than a River- or Marsh-Tern, breeds in most parts of the temperate regions of both hemispheres. In the eastern hemisphere it is found in summer all over Europe below 55° N. latitude; but breeding only in Denmark and on both coasts of the Mediterranean (of Italy excepted) and the Black Seas. Elsewhere in Europe the Gull-billed Tern is a visitor just as it is in England. The individuals so summering, migrate to Northern Africa in winter. It breeds over temperate Asia and the south of China, whence in winter it spreads through India, Ceylon and Burmah to the Indian Archipelago and to Australia, where it has also been observed breeding. In the western hemisphere it occurs down on the eastern coasts as far as the south of the Argentine Republic; but only on the coast of Guatemala on the western side of the hemisphere.

The Gull-billed Tern differs somewhat in its places of resort from the Marsh-Terns, preferring the estuaries of rivers, sandy shores of the coasts, and salt lagoons, to inland fresh-water swamps and lakes—although it does frequent them also. The receptacle for its eggs is hardly a nest, but generally merely a hollow scratched in the sand or dry mud, with occasionally a few shreds of vegetable material laid in. Like other Terns, this species also builds in large colonies. "Two is the usual number of eggs," says the late Mr. Seebohm, from observations made by himself in a lagoon in Asia Minor, "and I have frequently found three but never four. The eggs of this bird are by no means so handsome as those of *Sterna cantiaca*, nor are they on the average quite as large. A usual sized egg

measures 2 inches by $1\frac{3}{8}$ inch. A smaller and rounder egg measures $1\frac{3}{8}$ inch by $1\frac{1}{8}$ inch, whilst an abnormally large . . . one reaches the dimensions of $2\frac{1}{8}$ inches by $1\frac{3}{8}$ inch."

The male and female are alike, except that the latter is somewhat smaller than the former, and has a slightly more slender bill. In the breeding season the forehead, from the nostrils, over the top of the head to the level of the eye, down to the nape of the neck, including the crest, jet black; all the upper surface, including the tail (whose outer feathers are whiter) pearl grey; primaries (of which the four outer are white shafted), when fresh moulted, pearl grey, but later in the season the tips and inner webs darker; "a distinct white wedge on the upper part of the inner web of the outer primary, but smaller and less defined on the succeeding flight feathers" (Saunders); lower half of the lores, sides of the face, and the entire under surface of the body and wings, white; bill black, sometimes red at the base of the lower mandible; iris brown; legs and feet reddish-black, the webs of the toes moderately indented. Length $14\frac{1}{2}$ - $15\frac{1}{2}$ inches; wing 12-13, or more than twice the length of the tail, which is $5\frac{1}{2}$ -6, a character which distinguishes this Tern from other species; as also the tarsus in being $1\frac{1}{2}$ inch, or larger than the middle toe and claw, which together measure $1\frac{1}{4}$ inch.

The eggs are intermediate in colouration between those of the Gulls and Marsh-Terns, and provide another character, in addition to the form of the bill and the habitat of the bird, indicating the intermediate position the Gull-billed Tern holds between the *Larina* and the *Sternina*. According to Mr. Seebohm, whose enormous collection of eggs gave him a better opportunity than most ornithologists for studying their various varieties, says that the ground colour is a yellow ochre, or stone colour, of a lighter or darker shade, and occasionally a pale greenish-brown, with small greenish, or reddish-brown, roundish spots or irregular blotches, those underlying being paler and greyer (simply because they are, as in all eggs, not on the surface, but underneath a thin layer of shell); as a rule the markings are evenly distributed, or they may be more agglomerated round the larger end.

The eggs are laid about the beginning of June, and the young are mostly all hatched before the end of July. The downy chicks are buffy or stone-white, mottled and striped with brown, or dark grey, on the top and sides of the head, and along the back: the under side is uniform greyish-white.

The fully fledged bird differs from the summer dress in having all the region which is then black distinctly buff-tinted white, streaked with greyish-black on the crown and mottled on the nape; the eye set in a darker lozenge; the upper side, especially between the wings, distinctly fawn colour, deepening (in a week or

two) into brownish-buff, the feathers centred with brown; the wing quills darker than in the adult in summer garb; bill, legs and feet reddish-brown.

By the time the bird is two months old, the brown and the buff have considerably diminished, and during the first spring and summer pigment changes occur, which result in its garb differing from the above only in the diminution of the brown and buff, and in the darkening of the streaks on the head, a plumage almost like that of the adult in winter, in which the brown becomes black; the back is slightly paler than in summer; the quills (which are fresh and "frosted" in November and December) are hoary grey, and the outer tail feathers whiter than in summer.

The absence of a dark bar across the lesser upper wing-coverts, distinguishes the young of this species from those of the Arctic or the Sandwich Terns.

The adult Gull-billed Tern may at once be recognized from the Sandwich Tern, which it so nearly resembles, more indeed than any of the other British species, by the great length of its hind toe.

Mr. W. H. Simpson, who collected the eggs of this species in the lagoon of Mesolonghi, observes that the greater number of the nests were placed "in the raised outer edge [of the islets], which, in case of flood, would remain longest high and dry. The eggs were deposited upon the sand or soil, in a depression slightly lined with a few bits of dead grass, and are not easily detected, as their colours blend with surrounding objects. The birds appear to commence incubation simultaneously, or nearly so, as most of the nests contained eggs pretty fresh. They did not evince the anxiety which many Terns do about their eggs, but simply contented themselves with flying in a body at a great height over the islands. I strongly suspect that in these hot countries the Terns do not care to sit upon their eggs throughout the day, and this may be the reason why one often sees flocks of *S. anglica* feeding miles away from head quarters."

Mr. Dresser, who observed this bird in Texas, gives the following very excellent account of it:—"I met with it," he says, "breeding in considerable numbers on Galveston Island . . . In habits it reminded me a good deal of the Sandwich Tern, but was rather more Gull-like, and its call-note especially bore resemblance to that of a Gull. I found it breeding in colonies; and when I was engaged in examining the nests, the parent birds flew anxiously round, uttering loud cries. As a rule the nests were mere holes scratched in the sand; but in some instances an attempt had been made to form a bed of straws and drift-stuff for the reception of the eggs, which were generally three in number, though in one or two instances I found as many as four in one nest, whereas in Europe two or three are the complement. I did not notice these birds fishing; they

seemed to be feeding chiefly on insects, of which there were quantities in the neighbourhood of the breeding colonies. On the wing they were exceedingly swift and elegant; and their flight seems more powerful than that of most of the smaller species of Terns. According to Von Heuglin this Tern feeds chiefly on *Orthoptera* of all sorts and sizes, *Libellulidæ*, *Coleoptera* and *Lepidoptera*, occasionally also *Mutillidæ*, which it catches with ease on the wing. When there is a prairie-fire it is found there, with many other species of birds, darting into the dense smoke in pursuit of locusts; and it also catches young birds and small mammals, and is often seen fishing amongst the surf. Mr. O. Salvin, who met with it in Algeria, says that it feeds over the grass-fields and open land, hovering and descending, as it does on an English coast over a shallow, its food being grasshoppers and beetles instead of sand-eels." Herr Gätke observes in the "Birds of Heligoland," that "the great difference in the mode of life of this species from that of its near congeners could not fail to attract the notice of the observant Heligolander, and he has christened the bird accordingly [Lunn-kerr, or Land Tern]. Any one who, day after day, has watched the Terns darting down into the sea from great heights, so that the foam spurts high into the air, must feel particularly impressed to see a bird so similar in appearance roving about over the fields, suddenly dropping among the long stalks of the potatoes, and disappearing from sight. Such, however, is the only way in which the bird seeks its food on this island; for it has never been seen fishing on the sea like the other members of the genus."

The note of this Tern in the breeding season has, by most of those ornithologists who have had an opportunity of listening to it, been described as resembling the "laugh" of the Gull, variously modulated, and, sounding doubtless differently to different ears, it has been recorded by different phonetics. The recording of the various notes of birds offers a large and interesting field to the ornithologist armed with a phonograph.

Mr. Darwin, who procured a specimen at Bahia Blanca, in Northern Patagonia, says, "I may here observe that many navigators have supposed that Terns, when met with out at sea, are a true indication of land. But these birds seem not unfrequently to be lost in the open ocean; thus one (*Megalopterus stolidus*) flew on board the *Beagle*, in the Pacific, when several hundred miles from the Galapagos Archipelago. No doubt, the remarks made by navigators, with respect to the proximity of land where Terns are seen, refers to birds in a flock, fishing, or otherwise shewing that they are familiar with that part of the sea. I, therefore, more particularly mention that off the mouth of the Rio Negro, on the Patagonian shore, I saw a flock [probably of this species] . . . fishing seventy miles from



CASPIAN TERN ♀

SUMMER

land; and off the coast of Brazil a flock of another species, hundred and twenty miles from the nearest part of the coast. The latter birds were in numbers, and were busily engaged in dashing at their prey."

One of the present writers may perhaps be allowed to quote his own experience on this point, from "A Naturalist's Wanderings in the Eastern Archipelago," p. 12. "On the afternoon of the sixteenth day of weary beating from Anjer [in West Java], a pure white Tern suddenly appeared, and, circling about the vessel, produced quite a flutter of excitement. It was the lovely *Gygis candida*, one of the Keeling Island birds, which our native boatswain declared never went far from home, and that, therefore, we must be near our destination. Several of the sailors ran aloft, and in a few minutes descried to the northward the crowns of the higher cocoanut palms on the southern islands. We straightway changed our course, for our skipper had evidently miscalculated our noon position, and, but for this timely pilot, would have sailed past in the night. At sundown the islands appeared from the deck as a dark uneven line, rising little above the horizon; at ten o'clock we sailed into the anchorage."

Family—LARIDÆ.

Subfamily—STERNINÆ.

CASPIAN TERN.

Hydroprogne caspia, PALL.

THIS bird was first discovered about hundred and twenty-eight years ago, on the margin of the Caspian Sea, and derives its name, therefore, from the locality in which it was first captured. More than a dozen specimens have been killed in England, the majority of them on the south and south-east coast; it has been recorded also from Yorkshire and from as far north as the Farne Islands. It has not been detected in Ireland or Scotland.

Wherever this species happens to stray, it can scarcely elude the notice of any one accustomed to observe our more Common Terns, on account of its large size (it is the largest species frequenting Britain), its short wings and its fine scarlet bill. That it has not more frequently visited this country is somewhat remarkable, for its distribution over the globe is very wide. Its northern-most breeding place in the Eastern Hemisphere is in the islands of Sylt, in the Baltic Sea, in about 60° N. latitude. It is met with in summer to the southward of this parallel throughout Europe as far as the Mediterranean, on both sides of which its nests are to be found, whence it extends down the coasts of Africa. In Asia it breeds south of the above named parallel (but is absent from Japan), and is found along the shores of the Gulf of Persia, on the Caspian Sea, and on the salt lakes of Turkestan. Thence in winter it frequents rivers, jheels and tanks in India, but without breeding, though strangely enough, it has been found nesting in Ceylon, and has found its way to Australia and New Zealand, where it breeds also. In the Western Continent it has been taken from near the arctic circle down its eastern coasts as far south as Florida, yet on the western side it does not extend beyond California.

The male differs from the female only in being slightly smaller and in having the bill of a paler red. Both have, therefore, in the breeding season, the head, from a point in line with the nostrils, extending below the eyes and over the crown to the nape of the neck, glossy greenish-black; the mantle, the rump, the upper tail-coverts, the wing-coverts, the tail (whose feathers are white-shafted and have the outermost quills pointed and but slightly longer than the rest), and the primaries (whose shafts are also white), when freshly moulted, pearl-grey; the latter are later in the season, when worn and rubbed, darker grey; the margins of their inner webs and the entire web of the first quill slate-blue; face beneath the black hood and the entire under surface pure white; the bill scarlet, the legs and feet black. Total length 20 inches (more or less); wing $16\frac{1}{2}$; tail 6; tarsi $1\frac{7}{10}$ inch, and the middle toe with its claw $1\frac{7}{10}$.

The Caspian Tern prefers to breed in colonies not far from the sea; but, nevertheless, often frequents lakes and lagoons a long distance from the coast.

The nest is a mere indentation in the ground, in which three eggs, sometimes fewer but never more, are laid about the beginning of June or the end of May.

The eggs, which are larger than those of the Gull-billed Tern, are of a brownish-buff or stone-grey (often very pale) ground-colour, marked with small brown or blackish segregated spots, and others abundant and underlying of a pale olive-brown colour. They vary in size from a little over or under $2\frac{1}{2}$ inches in length, by a little more or less than $1\frac{3}{4}$ inch in diameter.

The nestlings appear about the end of June or beginning of July, clad in pale buffy- or greyish-white down, mottled with grey or brown; their under surface dull white; and the bill, legs and feet yellow.

The plumage of the young birds differs from that of the summer described above, in having the bill orange red, horn coloured at the tip; the forehead, the crown, the nape and the lores white, streaked with black; the ear-coverts and orbital patch black; the mantle mottled and barred with brownish-black; the wing-coverts and secondaries much marked with brownish-grey; the tail mottled and barred with brownish-black; the primaries ash-grey to brown at the tips; back pearl-grey; rump and upper tail-coverts paler; the entire under surface pure white.

During the first autumn, and the first spring and summer of the bird's life, a few feathers are probably moulted; but the change that takes place in the colour of the plumage is due chiefly to a pigment change in the feathers. During this interval the principal change that occurs is the loss of the mottled and barred markings of the mantle and tail.

Mr. Saunders gives the following description of the young at this season and before its first real moult, which is in the second autumn of its life. Beak dull red, horn coloured at the point; the lores, the forehead, the nape and the top of the head streaked with white and black, the upper surface of the body varied with patches of ashy-brown and darker transverse bands; the feathers of the tail have dark ends; primary quill-feathers also dark; entire under surface pure white.

The winter plumage, which results from the autumn moult, is similar to that of the breeding season, but the feathers of the crown of the head and sides of the face are white, broadly centred with black.

"On the third June," writes Mr. H. Durnford, in the "Ibis" for 1874, "we walked from List, the most northern village on Sylt, to the nesting place of this species on the north-west coast of the island, half-way between the two lighthouses. There were two small colonies, some hundred and fifty yards apart, consisting of about ten and the other of about fifteen pairs of birds. They lay their eggs in the bare sand between the beach and the dunes, in a slight hollow about the size of an Oyster-Catcher's nest, occasionally lining it with a few pieces of shell, no nest (and we saw about a dozen) containing more than two eggs, which is not to be wondered at, as they are robbed by boys from List on every possible occasion. There were about ten eggs on the ground, two nests with two each, others containing a single egg apiece, and a few empty The Caspian Tern is an exceedingly handsome bird, its bright red bill, when circling over one's head, contrasting well with the dark coloured legs. Whilst approaching the nesting

grounds we were greeted with harsh and noisy screams. Their note is not unlike that of *Sterna fluviatilis*, but louder and more powerful. When they have young they are said to be extremely bold; and the farmer told us that when, on one occasion, he was visiting them with some friends, a bird took from a lady's hand a pocket handkerchief which she was waving over her head." On the 29th of March, 1871, Dr. Möbuis visited the same breeding place, called Ellenbogen, on Sylt, and saw only seventeen nests, while in 1819 Naumann was able to find three hundred, and Dr. Boiè, at a later period, two hundred, showing a continual diminution of the colony.

Gould says that he could always discover the eggs of this Tern, by the clamorous, cackling, screeching note which the bird constantly uttered while flying near the place where the nest was. He states also that he never saw it breeding in colonies, and unless they were nesting on a large island, he rarely met with more than a pair on an island.

Mr. Dresser has given so interesting an account of the bird from his own experience, that we make no apology for the following extract from his great work "The Birds of Europe." "This, the largest and most powerful of our European Terns, is almost essentially a frequenter of the sea, seldom occurring inland or on smaller sheets of water; and it is said to wander less than its allies, being seldom found far from its nest during the breeding season. Where I have met with it on the coasts of Sweden and Finland, it is rather scarce than otherwise, and is found during the breeding season in single pairs, appearing unsociable in its habits; but in places where it is common, it collects together in large numbers and breeds in colonies. When sitting, the large bill gives it a somewhat ungainly appearance; but on the wing it is graceful and active in its movements, more so than the Gulls, though slower and not so buoyant as most of the other species of Terns. It is powerful and bold, and is strong enough to protect its eggs and young from any of the Gulls; but at the same time it is said to take toll, like these, amongst its weaker feathered brethren, and to now and again catch and devour a young bird, or steal an egg or two. It swims more than the other Terns, but is not a very good swimmer. It feeds chiefly on fish, which it catches as they are swimming close to the surface of the water, pouncing down on them after hovering for a moment in the air; but it is said never to immerse itself below the surface when plunging down after its prey; but merely dips its head in the water. When caught the fish is swallowed whole, head first; and digestion is very rapid, so that before it has been long in the stomach it is reduced, all except the bones, to a sort of pulp."



SANDWICH TERN ♀

Family—*LARIDÆ*.

Subfamily—*STERNINÆ*.

SANDWICH TERN.

Sterna cantiaca, GMEL.

THIS Tern derives its names of "Sandwich" and "Kentish" Tern from having been discovered (in 1784) in the neighbourhood of the town of Sandwich, in Kent—a locality near which it is now almost quite unknown. It regularly breeds in England, though far less abundantly than formerly; for owing to persecution it is found now only in the few localities where it has been permitted to nest undisturbed.

It breeds still also on Walney Island, off the Lancashire coast, and at the mouth of the River Esk; and on the Farne Islands on the east coast. Through the well directed efforts of a few naturalists, who have formed an association for the protection of the sea birds which annually resort to the latter locality to breed, there were in June, 1892, as many as 2,400 nests of this Tern there; while in 1867 there were only some 200 pairs nesting. We understand that Walney Island has now also become a "protected area," as are the estuaries of the Dee and the Mersey, in which birds can not be shot at any season of the year. No doubt this, along with other rare species which occasionally resort there to build, will now have a chance of increasing on the western as well as on the eastern side of England.

In Scotland the Sandwich Tern breeds at several places on the east coast and on some of the inland lochs. In Ireland there is, we believe, only one small islet in a lake between Killala and Ballina, in County Mayo, where the bird finds a safe nursery. We dare to name this locality because the proprietor, Sir Charles Gore, to whom every ornithologist feels grateful for his action, strictly preserves from molestation these birds, which are prone, on very little interference, to desert a breeding place.

Beyond the British Isles the Sandwich Tern has been found along the whole of the western shores of Europe, south of the latitude of Denmark. In summer it frequents the coasts of the Black Sea, and breeds on the Caspian, thence it migrates to Asia to winter along the shores of the Red Sea, the Persian Gulf and the coasts of Sind. Birds frequenting Western Europe winter in Africa,

appearing down all the west coast to the Cape, and round on the eastern side as far as Natal. On the American coast it occurs off southern Massachusetts, but breeds only south of Florida, then wintering still further south, through the Gulf of Mexico (ranging across to Guatemala on the western side) to Brazil.

The Sandwich Tern arrives on our shores early in the season from its winter retreat (in Northern Africa probably) generally between the middle of April and the middle of May, occasionally a few individuals have been seen as early as mid-March. According to Mr. Seebohm it arrives at the Farne Islands about the middle of April, "to reconnoitre its breeding grounds; every morning the birds pay an early visit to the islands, before they disappear to fish; as the time when they begin to lay approaches, they lengthen their stay, until about a month after their arrival they have finally decided on a site for the colony, when they take up their permanent abode on the islands for the season." They arrive in almost their full breeding attire. There being no distinction between the plumage of the two sexes, both have the feathers of the crown pointed and elongated into a crest; the tail—its outer feathers about $1\frac{3}{4}$ inch longer than the rest—shorter than the wings and the hind toe very small. The forehead, from the nostrils to the level of the lower edge of the eye, over the top of the head to the nape of the neck black; general colour of the upper side dark pearl-grey; but the sides of the face below the eyes, the sides of the neck, the tips of the scapulars, and the bend of the wing, the upper tail-coverts and the tail, with the under side (including the under wing-coverts and the axillaries) pure white; the under parts during life present a slightly roseate hue, vanishing at death; the primaries (which are assumed freshly in March) darker, the margins of their inner webs with conspicuous white borders (which become worn off by May); the four outer quills "with white shafts, accompanied by a blackish band along its inner aspect to the end of the feathers, the rest of the inner webs white; inner primaries and secondaries white, with more or less grey on the outer webs" (Sharpe); bill black, tipped with yellow; legs and feet black. Total length 16 inches; wing 12; tail $5\frac{3}{4}$; the leg (which is short) is $1\frac{1}{8}$ inch, and the middle toe with its claw $1\frac{1}{8}$ inch.

The Sandwich Terns, which are somewhat smaller and feebler than the Caspian Terns, begin to nest about the end of May; and being true Sea-Terns their breeding places are usually marine, though they have been known to breed in inland lochs even far from the sea. It can scarcely be said that they make a nest, for their eggs are deposited on the bare sand in slight hollows on some flat sandy or stony terrace, with or without vegetation; sometimes the nest may be made on a drift heap or in a clump of Campion. Their "nests," as Mr. Seebohm has observed, are "in diameter and depth of the dimensions of a cheese plate, and

they and their contents were so difficult to distinguish from the sand and fine gravel, that my first discovery of the colony was to find that I had 'put my foot in it.'"

These terneries are often very large and the nests so close together that it is very difficult to traverse them without stepping on the eggs. Close by may often be found the nests of other species of Tern, of Gulls and of other sorts of water-fowl.

The eggs vary in number from two to three: frequently only two, but never more than three, are laid. They differ considerably in size, and are, as a rule, conspicuously but very varyingly marked; the ground colour being brownish-buff, cream, or oil-green, blotched or spotted with dark brown and black, with other spots, blotches and scrawls of a lighter shade, seen distinctly underlying the surface of the shell. Their size is from 2 inches to $2\frac{1}{4}$ in length, and about $1\frac{1}{2}$ inch in diameter.

Only one brood is raised in the year. The length of incubation is about three weeks, at the end of which—from the middle to the end of June—the little downy chicks, pure white below, and buffy-grey mottled with greyish-black on the back and upper side, break their prison walls. The chicks are all quite alike despite the great variability of the eggs.

Soon after the date of the commencement of incubation, the parent birds begin to lose the black head, and at their autumn moult they assume their winter garb, which differs from that of the summer, in having the feathers in the upper part of the head white with only a median black patch; those of the back of the head bluish black with white margins; a black spot in front of the eye, and the nape streaked with black; the roseate hue on the underside is slightly paler than in summer.

The young birds in their first plumage are constantly to be seen in company with their parents throughout the remainder of the summer till about the end of September or beginning of October, when all together they take their migratory flight southwards. In the immature birds the bill is shorter than the head, is of a horn colour and yellowish at the tip; the feathers of the nape are oblong and rounded, their garb differs from the winter attire of their parents in having the forehead with small brownish-black touches; the upper part of the head and nape dull white, mottled with brownish-black and pale-reddish; the fore part of the back and shoulders and the rest of the upper parts as in the adult, but everywhere marked with reddish-brown barred with blackish-brown; an ashy grey band along the lesser wing coverts; the quills dark grey edged and tipped with white; tail feathers white and tipped with dusky-white. The occipital crest appears only after the first moult, that is in the second autumn of their age.

In September the young birds undergo a moult after which the "upper parts of the head and nape are variegated with black and white. The forepart and sides of the neck with all the lower parts pure white; as are the head, neck and rump, but most of the feathers there have a crescent at the tip. The forepart of the back, the scapulars, the smaller wing-coverts, are light greyish-blue, with similar black bars; the secondary coverts unspotted and toward the end white; the secondaries white with an oblong dark grey mark toward the end, the primaries and their coverts of a darker grey on the outer and a great part of the inner webs. The tail feathers pale grey, shaded with darker toward the end, where they are margined with white" (Macgillivray). In their habits the Sandwich Terns differ very little from the species we have already described. Their food consists of fish-fry; sometimes of shell-fish and small fishes, especially of the sand eels (*Ammodytes tobianus*) which live buried in the sand but rise to the surface often quite suddenly in great shoals, and when attacked dive as suddenly to the bottom, again seeking safety in the sand. The Sandwich Tern is almost constantly on the wing, on the outlook for food and every little while uttering a harsh and grating cry audible a long way off. The Sandwich Tern, when its eye catches sight of its prey, dashes down perpendicularly into the water, though rarely immersing its whole body, whence it emerges in a few moments successful. If the object of its attack should move away from the surface the Tern will with a quick and easy evolution recover itself, and instead of striking the water, will sail over the spot and ascend again into the air. When shot on the wing it falls gyrating to the ground, reminding one much of the "tumbling" performed by many species of *Rhipidura*, due, as Sir William Jardine long ago pointed out, to the small, light bodies being greatly supported by the long tail and expansive wings.

Sandwich Terns make their appearance in Heligoland, according to the observations of the patriarchal ornithologist of the island, Herr Gätke, "during the second half of April and until the middle of May, when they may be seen chasing one another about, in pairs, in the bright sunshine, at heights of from five hundred to a thousand feet, amid frequent utterance of their loud shrill cries, often, indeed, their calls alone are audible from heights to which the eye vainly endeavours to penetrate. These are undoubtedly breeding pairs from the coasts of Sleswich-Holstein and East Frisia, which rejoicing in their recent union, thus gaily disport themselves, but a few minutes being required to take them back to their home.

"Somewhat later the same birds are met with in much larger numbers. They then come in swarms very close to the Sand-island, dipping incessantly down



ROSEATE TERN 3

to the surface of the water in pursuit of sand-eels . . . The birds at first consume these themselves, but later on carry them to their young. The young appear on the scene very soon after their education is finished, arrayed in the mottled plumage of their early youth, and old and young may then be seen fishing near the dune until the end of the summer."

Family—LARIDÆ.

Subfamily—STERNINÆ.

ROSEATE TERN.

Sterna dougalli, MONT.

THIS very beautiful Tern was discovered on the 24th July, 1812, by Dr. McDougall, of Glasgow, in the Cumbrays, two flat rocky islands in Milford Bay, in the Firth of Clyde, and was described in the following year by Colonel Montagu, in the Supplement to his "Ornithological Dictionary," already referred to on a former page. "On these Islands the Common Tern swarmed, and," says Montagu, "the first of the new species was shot, by accident, by one of the Doctor's companions, and happening to fall close to him on the rocks he was attracted by the beautiful appearance of its breast"; and, as Dr. McDougall pointed out, it was, in the air also, easily discerned "by the comparative shortness of wing, whiteness of plumage, and by the elegance and comparative slowness of motion; sweeping along or resting in the air almost immoveable, like some species of the Hawk; and from the size being considerably less than that" of the Common Tern.

Of the specimens which formed the types of this species, one is in the British Museum, and two are in the magnificent collection, bequeathed in 1851 to the city of Liverpool by Lord Derby, and now in the Free Public Museums. One of the latter passed into the XIIIth Earl's celebrated Museum, by presentation to him by Colonel Montagu, and two were purchased by him at Dr. McDougall's sale, as the following MS. note, preserved in Liverpool, in Lord Derby's hand, indicates:—

“In my specimens, which were those preserved by Dr. McDougall and procured for me at his sale, the upper [outer] feather of the tail exceeds the next to it by about three inches, and the wings by three and a half in the male, in the female by about half an inch less. A third specimen was given me by Colonel Montagu.”

After Colonel Montagu's discovery it was found that the Roseate Tern, which had been mistaken in several of its resorts for the Common Tern, was breeding on other places on the Scotch coasts*; in the Irish Channel, near Belfast; on Foulney and Walney Islands, on the Lancashire sea board; on the Scilly Isles, and on the Farne Islands lying off the Northumberland coast. Most of these stations are now deserted; but as late as 1864, Mr. J. E. Harting found the species on Walney, and in 1865, Mr. Howard Saunders observed a single pair there.

In the “Zoologist,” however, of 1897 (p. 165), the interesting announcement was made that the Roseate Tern was again a breeder in our islands. “Your readers,” writes Mr. Potter, “will be aware that eminent and leading ornithologists have for some years been of opinion that the Roseate Tern only visited our coasts as a casual summer migrant, and this has been so stated in all recent works on British Birds However, for the past few years I have known of a colony of these birds nesting annually in Britain; but, of course, for obvious reasons I must refrain from naming the precise locality. In 1895 I sent Mr. J. T. Proud, of Bishop Auckland, specimens of their eggs, and informed that gentleman of the whereabouts of the locality, and last year he visited the place, saw the birds and obtained the eggs himself It is satisfactory to know that these rare birds have selected a portion of our islands for rearing their young where they are not likely to be much disturbed by man; in fact, as can be supposed, it is far from the path of the ordinary tourist or collector, and it is to be hoped that those gentlemen, who are already aware of the habitat in question, will keep it secret for the sake of the birds and British ornithology.” The precise locality has not been published beyond that it is in Wales.

It is to be hoped this species may yet again breed in Norfolk and in the Irish and Lancashire localities, where it was formerly in the habit of nesting.

As to the range of this interesting bird outside the British Isles, Mr. Howard Saunders, our greatest authority on the Gulls and Terns, thus sums up our knowledge of its distribution in the “Ibis” for 1896:—“It is a matter of common knowledge,” he writes, “that the Roseate Tern annually visits certain

* The Culbin Sands, on the Moray Firth, have long been known to receive occasional visits from the Roseate Tern. Mr. O. A. J. Lee saw seven pairs in that locality in May 1887, and obtained fresh eggs of this species (*cf.* Harvie-Brown and Buckley, “A Fauna of the Moray Firth,” Vol. II., p. 308).—H.A.M.

portions of the coasts of the United Kingdom for the purposes of reproduction. It is an oceanic Tern, nowhere numerically abundant, and remains with us for a very short time, being the last of the Terns to arrive and the very first to leave, and the young are, consequently, very rare in collections. It is, moreover, unusually intolerant of interference, and if the Common Tern (*S. fluviatilis*) becomes too numerous in its favourite haunts, it yields, almost without a struggle, and goes elsewhere. This has been proved, by Dr. Bureau, on the north-west coast of France. In 1890, I was surprised to find, at Geneva and Lausanne, examples which had been obtained on Lake Léman, in May; and I assumed that these were occasional migrants deflected from a supposed line of migration up the Rhone Valley from the Western Mediterranean, where, as already stated, the species was known to occur irregularly. No one has yet obtained the Roseate Tern on the coasts of the Iberian Peninsula, the north-west shores of Africa, or on the Canary Islands; but it occurs in Madeira, as well as in the Azores. Passing westward, we find it in the Bermudas; the West Indian Islands, generally from the vicinity of Venezuela upwards; and along the east side of America up to Massachusetts; not on the Pacific side, even where the continent is narrowest. Returning to the eastern hemisphere, the Roseate Tern has been taken at the Cape of Good Hope and in South-eastern Africa; breeds on the Mascarene Islands, Ceylon and the Andamans; can be traced by Tenasserim, Malaysia, and the Moluccas to Australia, and even to New Caledonia—its most eastern breeding place; while it ranges along the China Seas to the Loo-choo Islands, wandering to Hitachi, Japan.

“Now it will be seen,” continues Mr. Saunders, “that there are two very important gaps in its distribution; no authentic specimens being known from West African waters, between Madeira and the Cape of Good Hope, on the one side, or between the Mediterranean and the Indian Seas on the other. But when—as Mr. Whittaker has shown—a colony exists on the coast of Tunisia, it seems not improbable that the line of continuity should be sought eastward, along the coast of Africa, and southward, down the Red Sea to the Indian Ocean. It is quite conceivable that the Roseate Tern may not *breed* on the Islands of the Red Sea, because there, as well as at the Laccadive Islands and along the Malabar coast, we find—thrust in like a wedge—*S. albigena*, an allied species, which may prove inimical to *S. dougalli*, just as *S. fluviatilis* is, under certain conditions, further north. But it strikes me now that if a look-out is kept for the Roseate Tern along the Red Sea, in April and again in September, not omitting the Persian Gulf—for the bird may perhaps try the Euphrates Valley route—we ought before long to learn more about the somewhat mysterious distribution of this species.

Perhaps our northern birds may go no further south than the basin of the Mediterranean in winter."

The Roseate is the last of the Terns to arrive in the British Isles, and not till about the beginning of June need it be looked for.

The following is a description of the adults—of which both sexes are alike—in breeding plumage:—crown and hind neck deep glossy black, with bluish reflections; back and upper surface of the wings delicate bluish-grey; primaries darker, the inner margins of their webs "with conspicuous white borders, which extend to the extreme tips and even slightly ascend the outer webs; the outer webs and the lines parallel to the inside of the white shafts black to grey, according to the amount of frosting" (Saunders); the rump and upper tail-coverts paler; the long outer tail feathers quite white; the rest of the plumage white; but the under side and fore neck of a roseate hue, which fades greatly after death; the long and slender bill brownish-black, orange at its base; the legs and feet orange-red. Total length $15\frac{1}{2}$ inches; wings $9\frac{1}{4}$; tail $7\frac{1}{2}$; tarsus $\frac{3}{4}$ ths, and middle toe with its claw 1 inch. The wings are long, narrow and pointed; the tail long, very deeply forked, the lateral feathers attenuated and extending about three inches beyond the tips of the closed wings.

The duties of incubation commence as soon as possible after the arrival of the Terns at their breeding place.

Early in June the Roseate Tern lays, according to different observers, one, two, three or four eggs. It is possible that these vary in number under varying conditions, and it may be that occasionally two birds lay in one nest. The more usual number of eggs, however, is three. They are similar to those of the Common Tern, but are slightly smaller and more elongated. They are pale brown, or yellowish- or purplish-buff, with dark brown spots, which may be more or less thickly distributed, and may vary in shape and size. In length, according to Dr. Sharpe, they average from 1.5-1.8 inches in length by 1.05-1.2 in diameter.

The Roseate Tern nests, as does the Common Tern, in company with its own species, never very far from the sea. The nest is a mere depression in the ground, sometimes with, and often without any lining. During incubation the male feeds the female, who keeps to her maternal duties. Mr. Blanc, a collector in Tunis, has observed that this species, unlike most of the Tern family, "instead of leaving its nest exposed, endeavours to hide it as carefully as possible under any scrub-plants or long grass it may find available, sometimes making a tunnel-like passage or approach to the nest under the herbage. The nest itself is merely a depression in the ground, sometimes bare, at others thinly lined with grass bents, in which but one egg is deposited."

The young are hatched towards the end of June, or early in July; the nestlings being buff on the upper surface, spotted with white and grey, and pure white on the under side. They resemble more the nestlings of the Sandwich Tern than those of either the Arctic or the Common Tern.

By the middle of August the chicks have become fully fledged, their plumage differing from that of the adult in summer, above described, in having the bill black, the forehead and crown white, or cream yellow, streaked with black; the head and nape dark ashy greyish-black, streaked with white; the upper side flushed with buff and blackish-grey; a band on the wing blackish-grey, with white margins; back and wing-coverts bluish-grey, marbled with greyish-black and yellowish-white, crossed with subterminal arrow-headed bars; "dark grey centres to the inner secondaries; more grey in the primaries, with less pronounced white inner margins" (Saunders); tail with the outer webs of its feathers grey, except the outermost which are always white; the throat, a collar on the hind neck, and the whole of the under side white; legs and feet yellow.

Older immature birds differ from the above in the loss, partly by moult of the feathers, and partly, and chiefly, by a pigment change only, of the ashy mottlings and striations, the arrow-shaped markings and the buff blush on the upper side.

Throughout the remainder of August and, if the season be not too stormy, during all September, these birds may be seen along our coasts in company with their parents, which have now assumed the winter dress, which differs from their summer plumage in having the forehead mottled with white, and the under side pinkish-white. With them there will be always some of the previous year's birds in their winter attire, which may be recognized, from that of the adult in winter, by the dark band on the wing-coverts.

The Roseate Tern is one of the first of the *Sterninæ* to leave us for a more genial climate. By the beginning of October many have gone and the rest are ready to leave. If, however, the weather has been stormy, they have often all departed before that date.

As is well known, Terns are thrown into great disquietude by the approach of any intruder on their nesting ground, and will never disclose the site of their nest by returning home during his presence. Mr. Booth records the following ruse which he adopted in order to discover if a mate were present, on the Farne Islands, to a female of the Roseate Tern, which he had shot in the supposition that it was an Arctic Tern. "In order to obtain," he says, "a clear and uninterrupted view of the whole assemblage at each station, after alighting at their nesting quarters, I made use of the tactics often successfully employed with the Crow family, or the larger birds of prey. In company with three or four of the

crew of the fishing-craft that had piloted us from the harbour, we approached one of the colonies, and selecting a spot, at the distance of about sixty yards, where rough stones and litter were scattered among the slabs of rock, a shelter that afforded ample concealment was, with the help of a piece of old sail-cloth, speedily rigged up. After completing the work and placing the finishing touches on my hiding place, the men withdrew towards the boats. A very few minutes had elapsed when the Terns, after following the disturbers of their peace for some distance, gradually reappeared on the scene, and after hovering round for a time without detecting the alteration that had taken place, the main body settled quietly down, though a few still continued on wing. The greater number of those that had alighted shortly betook themselves to their domestic duties, others were busily occupied in cleaning their plumage, and the remainder, after stretching and going through various contortions, buried their heads in the feathers of the back and sought repose. Ample opportunities for making good use of the glasses were now offered

“The tints on the breast of this species, when seen in life or immediately after death, are far deeper and richer than even the most enterprising colourists have ventured to depict; the rosy hue, however, soon commences to fade, and in less than an hour a considerable alteration has taken place. The depth of the colouring doubtless varies considerably in different individuals, and also according to the season of the year It is, I am of opinion, only through May and the early part of June that the rosy tints are to be seen in their full beauty.”

The Roseate Tern “is at all times,” says Audubon, who observed it on the Florida Keys, “a noisy, restless bird, and on approaching its breeding place it incessantly emits its sharp shrill cries, resembling the syllables *crab*. Its flight is unsteady and flickering like that of the Arctic or Lesser Terns, but rather more buoyant and graceful. They would dash at us and be off again with astonishing quickness, making great use of their tail on such occasions. While in search of prey they carry the bill in the manner of the Common Tern—that is, perpendicularly downward, plunge like a shot with wings nearly closed, so as to immerse part of the body, and immediately re-ascend. They were seen dipping in this manner eight or ten times in succession, and each time generally secured a small fish. They usually kept in parties of from ten to twenty, followed the shores of the sand-bars and keys, moving backwards and forwards much in the manner of the Lesser Tern, and wherever a shoal of small fish was found, there they would hover and dash headlong at them for several minutes at a time.”



COMMON TERN ♂

Family—*LARIDÆ*.

Subfamily—*STERNINÆ*.

COMMON TERN.

Sterna fluviatilis, NAUM.

THE Common Tern is the most widely distributed species of the genus along our shores; especially is it abundant in Ireland and in the more southern parts of Great Britain.

It occurs in summer in suitable localities on the islands all along the western side of Scotland (except the Outer Hebrides), as far north as the Firth of Clyde, the Sound of Mull and the Island of Coll. "In our cruise [in the Outer Hebrides] in June and July," writes Harvie-Brown and Buckley, in their volume on the fauna of that region, "we may say we utterly failed to identify a single Common Tern anywhere to the north of the Island of Coll, and we paid more careful attention to the comparative distribution of the species than usual, even going so far as to shoot specimens at most of the localities visited where Terns were breeding."

On the northern counties of England and the eastern counties of Scotland it is very abundant, and is met with as far as the latitude of the Moray Firth, breeding on the shores, in the estuaries and far up the river valleys, even also on the inland lakes. It is to be met with on all the coasts of Ireland and on its interior loughs.

The largest colonies in Britain are on Walney Island in the west, and on the Farne Islands on the east coast.

North of the boundaries we have given, its place is taken by the Arctic Tern—the species next to be described.

Beyond the British Isles the Tern is found on the coasts, estuaries and inland lakes throughout northern Europe; in most of the Mediterranean islands and in Palestine—where Canon Tristram, to his surprise, found it breeding in the Lakes of Antioch, with "no trace," as he says, "whatever of the White-winged Black Tern, so common on the coast, and of the Whiskered Tern, which would certainly be found in such localities in Algeria or Tunis." The Common Tern is found throughout all temperate Asia, north of the Himalayan Range. It migrates in winter to India, Ceylon, and along the coasts of West and South Africa.

In the western hemisphere it only breeds south of the Arctic circle, whence as far south as Florida it is found on the coast and the inland lakes during summer; migrating, in winter, to the coasts of Brazil; but it is unknown on the western side of those continents.

The Common Tern begins to arrive in Britain in small flocks, mostly of old birds, early in May, often during the prevalence of east wind.

According to Mr. Booth, in spring and autumn, "while on their way to and from their breeding quarters, these Terns may be observed, in considerable numbers, off various parts of our coast line, the first comers usually put in an appearance towards the end of April, and all through May a stream of birds in larger or smaller parties continues, at short intervals, to pass onward towards the north. The most general movement appears to take place about the middle of May, when numerous flocks are occasionally met with in the Channel, heading steadily towards the east; after reaching the open sea their course is turned further north, some making for their breeding places on the shores of the firths and lochs of the Highlands, while the remainder continue their journey to more distant lands across the ocean."

The authors of "A Fauna of the Outer Hebrides" remark that however punctually Terns may make their first appearance, the actual time of their occupying the nesting sites "varies greatly with the weather, as also to some extent in different localities, especially, as we have noticed, in the Hebrides and western districts of Scotland.

"It is not until some time after the first appearance of the Terns that the ova of many species of fish hatch out, nor do the fry at once approach shorewards and surfacewards. Many are hatched out on shoals and sand-banks, or even in deep water at a distance from land; and, in a late season especially, Terns and other birds have to feed at a longer distance from their haunts on this account.

. . . . The time of the laying of the Terns is coincident with the time of their food supplies being most accessible to them. The natural history of birds and fishes in similar respects is therefore closely connected with each other's existence."

After their arrival these Terns spend a week or so in inspecting their whereabouts. They are, of course, very nearly, if not quite, in their full summer plumage; and having mated they finally fix upon a breeding place. The male is indistinguishable from his partner. Both sexes have the forehead from the level of the nostril through the centre of the eye, from above the ear-coverts over the crown to the nape, black; the chin, cheeks, sides of the head (including the lower part of the eye and the ear-coverts), rump and upper tail-coverts, under tail-coverts, under wing-coverts and axillaries, white; the rest of the under side vinous-grey;

the general colour above pearl-grey; "secondaries narrowly margined with white; outer primary with a black outer web and a broad streak of very dark grey next the white shaft on the inner web, the rest of the inner web white, except toward the tip, where it is dark ash-grey; inner primaries paler grey, with white 'wedges' and dark grey margins to the inner webs" (Saunders); the forked tail with the outer webs of its otherwise white feathers, grey—the outermost quills darkest; bill (its tip dark corneous), legs and feet, scarlet. Length 15 inches; wing $10\frac{1}{2}$; tail $6\frac{1}{2}$; outer feathers $7\frac{1}{2}$; tarsus .85; middle toe with its claw .95.

This species prefers for its nesting place low lying sandy islands, little above the level of the water, gravelly or pebbly shores, and often bare rocks. The nest is merely a rock depression, or a hollow in the ground, occasionally lined with a few strands of vegetable fibre, dry grass, or sea-weed.

The "Migration" Committee, in their various annual Reports to the British Association, note many instances "of the irregularity of Terns' behaviour at their nesting places, whether of the Arctic or the Common species; and perhaps still more markedly in the Little Tern. This unsettled habit is worthy of remark. They often occupy and then abandon their nesting places for apparently no particular reason, for it is not invariably because they suffer persecution, though they are more easily scared than most other sea birds. In the Hebrides there are innumerable places where Terns might breed, having, to all appearance, equal advantages with the selected spots; and possibly the very fact that they are naturally timid birds causes them to take advantage very frequently of a change of residence. In our "Migration Report" for 1886, we find, for instance, that a flock of Terns arrived at Little Ross, in the Solway Firth, remained a week and then left. In this case, however, they were of course only resting and feeding, probably without any intention of breeding there; but in many other cases such movements take place suddenly, almost in mid-summer, or in the middle of their nesting season, the dates of which vary greatly at different stations.

"For purposes of identification during his cruise in 1887, Harvie-Brown often shot some Terns from a colony, *both adult and immature*, thereby bringing the whole Tern population close about his ears. He scanned all carefully, then lifting the dead birds carried them to a distance, and by throwing them up in the air, again brought the birds all around him. There need never be any difficulty in bringing Terns thus close enough for identification." This sympathetic or inquisitive habit of the Terns is well known. If one of a flock be shot and fall wounded in the water, its companions immediately circle round in the air, uttering shrill screams and sweeping down close to it every few moments, as if encouraging it to rise.

The Rev. H. A. Macpherson, in his "Fauna of Lakeland," referring to the colony of Common Terns that frequents Walney Island, observes that "at the north end of the island the birds nestle on rough turf, but at the south end of Walney almost all the nests are placed among the sand-hills. There are exceptions to this practice. For example, in 1891 we found one nest of this species on the open beach, a hollow in the pebbles, lined with rabbit bones, containing two eggs; a second nest was also placed on the beach above high-tide mark, lined with small sticks, and containing a single egg. But we saw most nests in and among the bents of the tall sand-hills, carefully watched by hundreds of parent birds, which hover with shrill cries over the head of an intruder. Sometimes a bolder bird than the rest returns to its egg within full view, but the majority circle overhead, or dart angrily downwards until their solicitude has been lulled to rest.

. A much smaller number nest at the north end, lining some slight hollow in the turf with a few stems of grass, while even the newly hatched nestlings, with instinctive dread of danger, crouch in the grass almost motionless save for respiration." This Tern is very intolerant of cattle pastured in the site chosen on the ground, and will attack them with violence; and if much intruded on will forsake the station.

The Common Tern scoops out her nest-hollow, or lays her few straws in order on the ground, about the middle of June, and thereon deposits two, or not more than three, eggs, varying in size from $1\frac{1}{8}$ to $1\frac{1}{4}$ inches in length by about $1\frac{1}{8}$ inch in diameter. These have a general ground colour varying from "stone-colour to ochreous-buff or olive-buff, with spots or drops of black often merging into confluent blotches, the underlying spots being faint purplish-grey and not very distinct. Sometimes the variation in the depth of the colour of the egg is very marked, and the ground colour is so deep a rufous-brown that the black markings are scarcely perceptible. The markings are generally distributed over the surface of the egg, but are sometimes congregated in confluent blotches round the larger end" (Sharpe).

The nestlings emerge from the eggs after about three weeks incubation—during which one or other of the parents sits on the eggs all day, except in very sunny weather, and never at night, or when it is wet, are they left uncovered—enveloped in a light brownish-yellow down, spotted or mottled with black; the edge of the wing and underparts (except the throat, which is brown) being white; the forehead brown and the feet yellow. They grow rapidly during the first few hours, and one finds it hard to believe that, as Macpherson observes, "they were ever packed away within a small and round egg-case." As the nestling grows older the brown spots and mottlings become more distinct. When fully-fledged the forehead is brownish-white, the nape and rest of the head, including the ear-

coverts, are black; the hind neck, the throat, the chest, the rump and upper tail-coverts white; the shoulders and back bluish-grey, barred and mottled with greyish-brown; a broad band on the upper wing-coverts brownish-grey; over the upper parts there is generally a flush of buff; tail feathers with the outer webs greyish-brown; all the under side white; bill corneous, sometimes scarlet, its base reddish-yellow; legs and feet scarlet or reddish-brown; these and the bill increase in intensity of colour, according to Saunders, up to the autumn, and often quite rapidly change in October to dark, not resuming the light colour till next spring, the rump and upper tail-coverts also becoming grey.

During their immaturity—which lasts till their second and in some instances to their third spring—the forehead is white, and the grey on the wing-coverts becomes less conspicuous and extensive.

“On going up to a breeding place,” as Professor Macgillivray narrates, “which may always be discovered from a distance, as some of the birds are to be seen flying about it, one is sure to be met by several of them, which hasten to remonstrate with him by harsh cries and threatened blows; as he draws nearer, more of them leave their nests; and at length they are all on wing, wheeling and bounding, now high, now low, at times coming quite close, and increasing their cries, which resemble the syllables *cree, cree, cree-ae*. When walking along the sandy shore—no bird nearer, perhaps, than a quarter of a mile—you may see one or two of them coming up from a distance, increasing their cries as they approach, then wheeling and plunging over and around you, and at length flying off. Proceeding at a moderate height, they stop now and then, hover a moment, dip into the water, and secure a sand-eel or young coal-fish. Many attend on the fishermen or others who are catching sand-eels for bait or food, to fish up those which slip from them disabled. On such occasions they are very vociferous, as they also are when they have fallen in with a shoal of fry. They never dive; but I have often seen them alight on the water and swim a little, and sometimes a whole flock may be observed reposing on the placid bosom of the water, affording a very pleasing spectacle. They are very bad walkers, but on wing their movements are easy and elegant; they skim along, bounding by with great speed, ascend or descend, deviate to either side, stop short in an instant, hover in one spot like a hawk, drop, dive or plunge headlong with surprising adroitness. Their mode of flying, however, does not resemble that of a Swallow, and they obtain the popular name of Sea-Swallows rather on account of their forked tail.”

If a luckless young Black-headed Gull “happens to enter the ternery, the Terns swoop at him savagely, and frequently with fatal results. In one instance I saw about a score of young Gulls, unable to fly, cross the beach and make for

the bare sands, hoping thus to elude their persecutors. But their flight was vain, for the Terns followed their retreating enemy, one Tern after another in rapid succession darting down to disable, if possible, their inoffensive victims, which never attempted to show fight" (Macpherson).

Hardly is the breeding season over when the old birds begin to put off their nuptial dress and assume their winter plumage, which differs from the former attire in having the forehead and the crown mottled with white; the inner primaries black from loss of their "frosting," and the bill, legs and feet less brilliant red.

During the autumn both old and young birds may be seen feeding together during the day, and sometimes under the moonlight, in large flocks, or sitting, during rough weather, on a sandy shore under the lee of a bank. In September they begin to leave the northern parts of the British Isles, on their southern migration, and before the middle of October all, except, perhaps, a few stragglers, who are to remain all winter, have betaken themselves from our shores to less sunless skies.

Family—LARIDÆ.

Subfamily—STERNINÆ.

ARCTIC TERN.

Sterna macrura, NAUM.

THE Arctic Tern closely resembles the Common Tern; so much so, indeed, that for a long time the two were not recognized to be distinct species. It is not only an annual visitor, large numbers passing along our coasts, bound to other lands, but also a true British breeding bird. Its range within our islands is more northerly than that of the Common Tern, although the two mingle and nest together in one colony on the limits of their range.

In England this Tern breeds on the Scilly Islands, and on the southern and



ARCTIC TERN ♂

eastern coasts, at one or two points, but nowhere abundantly except on the Farne Islands, where there were, in 1892, on two members of the group, known as the Knoxes and the Wideopens, more than one thousand nests. The Arctic Tern, however, is especially fickle in regard to its breeding place, it may be in very scanty numbers in, or even absent entirely from, a locality where the previous year it nested very abundantly. They behaved in a most unaccountable manner one year on the Farne Islands, as one ornithologist has recorded. "They inhabited their usual breeding spots, laid their eggs and sat on them until a few were hatched, when suddenly every Arctic Tern left. They first left the 'Longstone,' the island furthest from the shore; about a week afterwards they left the 'Brownsman,' which is one of the middle islands; and ten days afterwards they left the 'Knoxes and Wideopens' in the same way. There were very few young birds hatched on the 'Longstone' and 'Brownsman' when the old birds left, but a large number on the 'Wideopens,' and not a single young Arctic Tern lived to fly away. The old birds stopped about the coast for some time, and seemed in a very weak condition

During all this time the Sandwich Terns seemed to flourish as well as ever, and their young were all hatched out and took to the wing in as large numbers as usual." The writer concluded that "they lived off different food, chiefly sand-eels, while the principal food of the Arctic Tern seems to be a very small fish like a tiny herring." Messrs. Harvie-Brown and Buckley have also recorded that in Hoy, in the Orkney Islands, "is a flat on which, twenty years previous to 1888, no Terns had bred. About that time a colony took possession of it and bred for fifteen successive years, when they deserted the place."

On the west coast of England the chief resort of the Arctic Tern is Walney Island, off the Lancashire mainland.

In Ireland this species is a regular summer visitant, and is more abundantly met with on the west coast, though it is by no means infrequent on the eastern side. It nests on Lough Carra and Lough Mask, Co. Mayo, its sole fresh water breeding place in Ireland.

In Scotland it is the most common species of Tern, and breeds (sometimes in association with the Common Tern) along all its coasts—especially of the islands—as far north as the Orkney and Shetland Islands.

Outside Britain the breeding range of this species is very wide; it nests all round the circumpolar regions of the northern hemisphere, up as high as within eight degrees of the pole, and perhaps higher, and as low as the 50th parallel of latitude on the European and the 42nd on the American side. During winter it spreads along the Mediterranean and down the western coast of Africa, rounding the Cape to the eastern side; in the western hemisphere it migrates as far south

as Brazil, crossing by the isthmus of Panama to the northern parts of Peru and Chili.

The Arctic Tern arrives in this country on its northern migration, about the same date as the Common Tern, and is seen along all our coasts (though but rarely inland) towards the close of the month of April, and at a correspondingly later date at stations further north, some of which may not be reached till June or July. In the Orkney Islands, Harvie-Brown and Buckley, in their Fauna of that region, note that the Arctic Terns "appear to arrive with remarkable punctuality between the 15th and 17th of May, there being only one record as early as May 6th." After their arrival they congregate on rocks or on the shore, and for a time appear to have no object in life but the catching of fish and the delights of feeding. Before the end of a fortnight, however, their separating off in pairs indicates that they have been pursuing other pleasures.

The sexes are alike, and in their summer or breeding plumage the adults so closely resemble the Common Tern in general colour, that it is difficult to distinguish the two species. The Arctic Tern, however, may be recognized by having the bill shorter and more slender than that in *S. fluviatilis*, and, in the old birds, of an entirely crimson colour, without any black on the culmen or at the tip, while in length it measures $1\frac{1}{2}$ inches as against 2 inches in the latter. The tail is also longer (exceeding the closed wings) as well as more pointed; the coral-red tarsus is at all ages shorter than that of the Common Tern, never exceeding the length of the middle toe (without its claw); the under surface is greyer, and the silvery grey of the back ascends higher on the neck, leaving only a narrow streak from the base of the bill below and behind the eyes white; while the dark edging along the inner side of the white shaft of the primaries is narrower and less conspicuous. Length $14\frac{1}{4}$ inches; wing $10\frac{1}{4}$; tail 7 to 8, with its fork 5 inches deep; tarsus .65 to .7; and the middle toe with its claw .85 inch.

"In its habits," writes Mr. Seebohm, "the Arctic Tern differs very little from its relative, the Common Tern. During its sojourn on our coasts it frequents rocky islands and sandy islets, and portions of the mainland coast that are both secluded and furnish a suitable nesting place. Like all the Terns the Arctic Tern is gregarious and lives in colonies, sometimes of enormous size, at others consisting only of a few pairs. On the wing it is even more graceful than the Common Tern. It looks the perfection of elegance as it beats along the coast, its long wings moved now slowly, now quickly, in a very Gull-like manner. Flocks of these birds usually hunt for food in company, flying along in a loose straggling manner. Every now and then one of them drops suddenly down into the water as if shot, and rises again with a little struggling fish in its bill. Sometimes it

will convey its capture to the nearest land, or not unfrequently sit on the water until it has eaten it. It is surprising with what force this bird descends; and the splash it makes can be heard for half a mile across the water. Like the Common Tern it rarely perches on the ground, save at its breeding place, or when about to rest or sleep, and it seldom tries to walk far. The air is its true element, and its long narrow wings seem never tired of bearing its little body to and fro. It sometimes floats buoyantly on the water for a short time, but never dives."

The Arctic Tern is almost exclusively marine in its nesting habits, very rarely going out of sight of the sea, and by preference selecting an uninhabited island. Messrs. Harvie-Brown and Buckley, however, state in their "Fauna of Sutherland, Caithness and West Cromarty," that it may be found breeding "on the banks of a loch or river, some distance from the sea. One favourite site is in the vicinity of a moorland loch about four miles from Wick, and the birds in passing to and fro from the sea always follow the course of the river." Its nest is generally a hollow scraped in the sand, without any soft lining; sometimes a few small pebbles are laid round it. Mr. Godfrey, who observed it breeding in company with the Common Gull, and other species, in a little island, clothed with broad flag-like vegetation, in Loch Grunnavae, on the mainland of Shetland, says that "most of the Terns' nests were situated on the grassy upper tract, and each was formed of grass and dry flags placed together without any tidiness or compactness; but in sufficiently thick layers to keep the eggs dry."

It generally breeds in large colonies, with the nests close together. Mr. Trevor-Battye, however, writes in the "Ibis" in regard to his Spitzbergen experiences: "I never came upon any place where these birds were nesting in large colonies. Three pairs at the most would occupy one part of the beach, and their nests would be far apart; then at the distance of a mile or so you might come upon a pair or two more. . . . A pair of Arctic Terns were for several days anxious to nest within a few paces of our large group of tents, and were little disturbed by passers, only flying off for a few yards and then returning to the spot, where they made many false nests. The Arctic Tern, when preparing its nest, works with both the shoulders, using its feet only as a pivot. After turning round and scooping thus, it rests for a little with its bill at the ground near. On moving the bird after one of these resting-spells, I have found little stones and bits of shells in the bottom of the nest. I had formerly supposed that these and the small bits of sea-weed occasionally seen in a Tern's nest, were there by chance, but I am not sure now that they are not put there by deliberate act.

"I do not think that the Skuas often succeed in robbing an Arctic Tern's nest. One pair of Terns in Advent Bay did all the fishing in the neighbour-

hood of the nest, and the appearance of a Skua within half a mile was the signal for attack. Neither an Arctic nor a Buffon's Skua has a chance with a pair of Arctic Terns.

"The Arctic Terns have a habit which I have described in 'Pictures in Prose' of *Sterna minuta* as observed in Norfolk; but the account so exactly fits the Arctic Terns that I may be forgiven, perhaps, for repeating it here: 'Returned from its quest the bird, with a fish in its bill, circles round and round and lower and lower over its mate, and presently drops down beside her. Then he begins a series of extraordinary evolutions. With head thrown back, wings drooping and tail cocked straight up, he struts—no other word expresses it—about in front of his mate. The attitude, a most comical one is exactly that assumed by the 'Laughing Jackass' Kingfisher when laughing. He jumps at his mate as if daring her to take the fish. Then he will fly round for a bit, only to settle again and repeat the play.'"

The bird feeds largely on pteropods, the stomach of one dissected by Mr. Battye being full of these; still higher in the Arctic regions an amphipodous crustacean (*Anonyx nugax*) appears to form its chief diet. On our own coasts small fishes are the staple of its food.

Captain Fielden records that during the Arctic expedition of 1875-76, during which, acting as naturalist, he collected a large mass of most valuable observations on the zoology of the inhospitable regions traversed by the expedition. "On August 21st, [1875] we found," he says, "eight or ten pairs [of this species] breeding on a small islet off the north end of Bellot Island (Lat. 81° 44' N.): the land at this date was covered with snow; and on the islet it lay about three inches deep. In one nest I found a newly hatched Tern; it seemed quite well and lively in its snow cradle. The parent birds had evidently thrown the snow out of the nest as it fell; for it was surrounded by a border of snow marked by the feet of the old birds, and raised at least two inches above the general level. The Terns of this islet were rather shy, none coming within range till I had handled the young one. There seemed to be abundance of fish in the pools between the floes, as the old birds were flying with them in their mandibles. The stomach of the female which I killed was empty; but that of the nestling contained remains of fish."

The Arctic Tern begins to lay in the beginning of June and deposits two to three eggs, two perhaps more commonly than three, very similar to those of the Common Tern. They are, however, slightly smaller and more pear-shaped, somewhat more spotted than blotched and the ground colour is darker. It takes a very good oologist indeed to separate the eggs of the one and of the other out

of a mixed heap of both. From their excellence as an article of food they are gathered in enormous numbers for the market.

The nestling of the Arctic Tern, which is hardly to be told from that of the Common Tern, has the back marked with black; forehead and throat black; beneath white or isabelline, with some brown on the flanks and hind abdomen. "When its breeding places," writes Dr. Macgillivray, "are invaded it evinces great anxiety and petulance, flying up and meeting the intruder, screaming out its creaking cries, hovering and bounding around him, sweeping close to his head, and sometimes, though very rarely, hitting him with its wings."

The young birds remain close to the nesting place till they are fully fledged. They have then the feathers of the upper surface, wings and tail pale pearl-grey, with subterminal bars of sandy-buff; a dark grey band on the upper wing-coverts; the forehead white, the hind part of the head and the ear-coverts greyish black, or mixed with whitish spots; the cheeks, back of the neck and the lower parts buffy-white, sometimes tinged with pearl blue; feet for several months yellowish, afterwards brown; the bill yellow at the base and corneous at the tip.

Young Arctic Terns may be distinguished—a by no means easy task on a general survey—from the young of the Common Tern, by the length of the tarsus and by the larger amount of the white colour on their outer primaries.

The young birds are hardly well fledged till they begin to lose, generally by pigment changes, occasionally by moult, the buff of the upper surface for a cloudy white, while the dark brown or greyish black bars become paler. The forehead and crown are then nearly white; the under-surface white; the bill and feet black.

After their first spring the black of the head is much mottled with white. After their first true moult in the second autumn, the birds assume a dress differing from the adults' winter plumage in having the crown and forehead almost white; the dark grey band on the upper wing-coverts continues as in the younger plumage, but there is more grey on the outer webs of the tail feathers; the bill and feet are black.

The moult of the following spring brings the young Arctic Tern into its first nuptial dress, above described; while after its next autumn change, following immediately after the breeding season, it assumes its first adult winter garb, which differs from its just discarded dress by the black on the forehead and crown becoming mottled with white, while the under surface becomes whiter, and the bright red of the bill and feet loses its brilliancy. At the end of the breeding season the young birds, after they have taken charge of their own destinies, very often assemble together till August when they begin to migrate

southward in advance of their parents. On their return the following year, they again keep very much to themselves, taking to a rock or a sand bank out at sea, and not intruding on the breeding colony.

The migration of the Arctic Terns to a southern latitude may be observed from August to October,—a date at which all the Terns, except those that have by some accident been detained, have left our shores.

Family—LARIDÆ.

Subfamily—STERNINÆ.

LITTLE TERN.

Sterna minuta, LINN.

THIS beautiful Tern is the smallest of all the European species, being only about half the size of the Arctic Tern; and is less numerous in Britain than the other species already described. In former times it had more widely distributed breeding places than now; for in many localities where it once nested it is to-day quite unknown.

It breeds along the east and west coasts of both England and Scotland as far north as the Orkney Islands. Its chief nurseries in England are the Farne Islands, where it is, perhaps, more numerous than anywhere else in our islands; it occupies a few sites on the Norfolk and Suffolk coasts; and nests also on Romney Marsh, and on Walney Island on the west. Of the two species breeding in Romney Marsh, the Common and the Lesser, “the latter is by far the more numerous,” writes Mr. Boyd Alexander, “but the numbers of both have sadly diminished of late years. Both species keep separate in their breeding haunts, the Lesser Tern preferring rather the close proximity to the sea. The restricted breeding area taken up by the Common Terns is distinctly prejudicial to the safety of their eggs. The children of the fishermen and coast-guard officers soon discover these spots, and the eggs are robbed right and left for purposes of eating. Over these places sheep have invariably been feeding, and where they have poked



LITTLE TERN ♂JUR
♂1

their noses, forming small stone-padded hollows, the eggs are more often than not laid."

In Scotland it breeds in the Orkneys and the Hebrides, and in many of the inland lochs. Messrs. Harvie-Brown and Buckley say:—"The curious distribution of this species on the east coast and west coast of Scotland is worthy of remark. If we examine even only the occurrences of certain species without their nesting places, and on migration or distribution alone, we find a curious and striking affinity between this west coast island of Tiree and the Moray Firth, species turning up at Tiree which we know to occur in the Moray Firth, but which are rarer or almost absent from localities on the west coast north of Tiree. We know also the undoubted 'fly-line,' or 'tide-way,' of birds up and down the Spey valley, though not emphasized by a lighthouse or lightship at the entrance of the Moray Firth; and we cannot do otherwise than consider the island of Tiree as a great *point d'appui* of migrants, both from the eastward and from the north-west, the perhaps united streams of which then pour down toward the south and south-east *via* the Rhinns of Islay"

In Ireland its main nursery is on a small lake in County Mayo; a few places round the coast are also tenanted by them.

Beyond the British Isles, according to Mr. Saunders, this Tern breeds in Europe from "about 60° N. (rare on the Baltic), as far south as the Mediterranean and the Caspian," and in North Africa. In winter it migrates down the western coast of Africa as far as the Cape. In Asia it breeds in "Trans-Caspia, Turkestan and Northern India," while in winter it finds its way to Burmah and Java. The Little Tern does not occur in the western hemisphere; but it is represented by closely allied species.

The Little Tern arrives in England from its winter quarters about the middle of May, and begins to nest toward the end of the month.

The two sexes are similar, except that the female is slightly smaller and has the tail feathers rather shorter, and in breeding plumage they have the line from the bill through the eye, the crown and the nape deep black; the forehead, the cheeks, the sides of the face, the lower rump, the upper tail-coverts, the tail and the entire under surface, including the under wing-coverts and the axillaries, pure white; the back and the wing-coverts pearl-grey; "the first three quills with black or blackish shafts, and blackish in colour, broadly margined on the inner web nearly to the tip with white; rest of the quills French-grey" (Dresser); bill, which is long, slender, curved and very pointed, yellow, tipped with black; legs and feet bright orange-yellow. Length 9½-10 inches; wing 6½-6¾; tail 3¾; tarsus ⅔ inch.

The nest of the Little Tern is a slight hollow on shingle banks near the sea, or on a sandy beach, sometimes lined with vegetable debris; but oftener a mere depression on the shingle inlaid with small pebbles, in which are deposited two or three eggs, the former number being the more common.

In colour the eggs are hardly distinguishable from those of the Common Tern; and are covered over with brown or black spots—those underneath the shell paler and of a purplish-grey colour, or irregularly blotched and dotted with the same colour. In dimensions they are about $1\frac{2}{3}$ inch in length, by $\frac{7}{8}$ inch in breadth.

The nestling is covered with a buff down, black on the head, grey on the back; the throat buff, but the rest of the under surface fawny white.

During the time they have eggs, or while the nestlings are still unfledged, the parents are very daring, darting down, or hovering closely over the intruder, and evincing more and more acute anxiety and alarm, the closer he approaches the eggs or young. The knowing depredator can thus cause himself to be guided to the very spots where the Tern desires him least to go. The Little Tern will also bravely attack Rooks or Crows which come too near to their colony.

The Little Tern, in its full fledged plumage, is thus described by Dresser:—“Crown brownish-grey, marked with black, becoming black on the nape and [after the second year] on the mark through the eye; upper parts dull French-grey, the feathers margined with blackish-brown [bars], outside of which is a narrow white margin; the tail as in the adult, but shorter, and slightly marked with blackish-grey at the tip; quills as in the adult; under parts pure white.”

For a short period after becoming fledged, the upper surface is flushed with reddish-buff, which very early fades. The immature birds are easily recognized from the old, during their first autumn, by the darker plumage of their upper side.

This species does not exhibit such marked seasonal differences as most of the other species already described. The Little Tern changes very little between its becoming fully fledged and the moult of its second autumn, when the black bars are lost and it assumes its first winter plumage, which differs from the winter dress of the adult only in being darker. In the following spring the Little Tern puts on its first nuptial plumage, which, as soon as incubation is over, it exchanges, as all the adult birds do, for its winter garb. This is similar to the summer plumage, but the head becomes somewhat whiter, and the grey on the back slightly darker; the outer primaries rather darker near the end; and the white parts sometimes flushed with French-grey.

“In the elegance of its buoyant flight,” writes that acute and ardent ornithologist, Professor Macgillivray, “as it skims over the waters, or shoots along on its way to and from its breeding place, the tiny creature must be an object of

admiration to every lover of nature. You may see a pair coming up from a distance, flying at the height of a few yards over the waves, their long wings winnowing the air and impelling them in starts, as it were, as they wend their way in undulating and wavering movements. Suddenly their flight is arrested by a large pool left on the sands by the retiring tide; with quick beats of their wings, they hover stationary, or but slightly shifting place, and with downward pointed bill seem intent on something which they perceive in the water. One drops, but not like a stone, dips, but with upraised wings, and rises with a small fish in its bill. The other is similarly successful. Onward they proceed, now and then emitting a shrill cry, and with gentle beats of their wings. Far ahead is a flock engaged in picking up their prey, and onward they speed to join their kindred. At many miles from their breeding places they may be met with, and yet they generally do not wander very far, as they can procure an abundant supply of food along the sands. Sometimes they may be seen sitting on the smooth water, and occasionally resting on the sands At the mouth of the [Mill-Den] Burn [near Aberdeen] is a flat recess in the sands, the banks retiring to some distance from the general line of the coast, and there, in spots where the little heaps of dried sea-weed had collected the dried sand about them, the colony had settled The eggs are very large for the size of the bird, rather broadly ovate, but somewhat pointed."

The Little Tern takes its departure from our shores early in the autumn. About the end of August, or early in September, old and young in flocks, recruited by birds from various districts of our own area and from places beyond the British Isles, begin to move southward, and for several weeks they may be observed, by travellers crossing the English Channel, winging their way towards their winter quarters.

Family—*LARIDÆ*.

Subfamily—*STERNINÆ*.

SOOTY TERN.

Sterna fuliginosa, GMEL.

THIS species has only slender claims to be included in the British avi-fauna. There are but three recorded genuine occurrences of the bird in our islands. The first was shot at Tutbury, near Burton-on-Trent, in 1852; the second near Wallingford, in Berkshire, in 1869, and the third, an adult, was caught alive about three miles from Bath, on the 4th or 5th October, 1885, "the weather," according to Mr. A. C. Foot, by whom the bird was sent to Mr. Howard Saunders, "being windy and the floods extending over the meadows."

On the continent of Europe it has been noted on two or three occasions at most, so that altogether it is an extremely rare visitor to the north-western parts of the eastern hemisphere. It is mainly an inter- and juxta-tropical species, with a special affection for isolated islands and reefs; but it stretches northward on the eastern side of America as far as the Florida Keys, where it breeds in large numbers; and it has been taken as high as the latitude of Massachusetts. It is almost unknown on the South American side of the Pacific. It extends beyond the tropics in both directions along the African, Asian and Australasian coasts.

The Sooty Tern is known under the name of "The Wideawake," and on the island of Ascension, where it nests in enormous numbers, its breeding places have long been celebrated under the designation of "Wideawake Fairs." Similar large colonies of this bird in the Tortugas have been described by Audubon. "No description," as Captain Sperling, speaking of the first named locality, says "can give an adequate idea of the effect produced by the thousands upon thousands of these wild sea-birds floating and screaming over this arid cinder-bed, the eggs and young scattered so thickly on the ground that in some instances it was impossible to avoid crushing them and the bleached bones of dead birds distributed in all directions."

According to Mr. Penrose, who described a collection brought to England by Dr. Gill, from Ascension, there are three "fairs" on the island itself, one very much larger than the others. The principal "fair" "was just at about its full height at the end of December, and had been going on for about six weeks before



SOOTY TERN ♂

that. The first appearance of these birds in 1877 was during the first week in October, and they continued to arrive daily for about two months. Their annual coming is said to be somewhat irregular, and they are stated to breed three times in two years, concerning which Mr. Howard Saunders has kindly allowed me to make the following extract from a letter to him from Mr. Unwin, dated September 5th, 1879. "The 'Wideawake' visits this island at, and remains for, very uncertain intervals, not every eight months [as has been asserted]; of this I am very certain from nearly four years' experience. Were not their eggs used so largely for food in this barren place, one could form some idea as to the length of time nature intended them to remain. I may, of course, be miles out in my opinion; but I fancy that, were it possible to take away the eggs immediately they are laid, the birds would not leave for a very considerable period. Last year they remained months longer than usual, owing to a very unusual downpour of rain, which flooded their breeding ground and killed thousands of young birds. They left about May and were back in August. It seems to me that no matter how often an egg is taken, another is laid, and the old birds still persevere in trying to rear a young one"

"Each bird normally lays only one egg; but when constantly plundered the same bird lays several times; and those who collect get, in a good morning's work, about two hundred dozen eggs. This fairly shows the number of birds and their closeness together. The eggs are said not to be so good as Plover's eggs, having a slight fishy flavour."

Mr. Bourne, who visited the island of Diego Garcia in 1885, writes that when he arrived on September 15th, Terns "were breeding in countless numbers on some of the less frequented parts of the island. The dark grey Terns [*Sterna bernsteini*] build rough nests composed of a heap of sticks and leaves piled up in the forks of trees and bushes; in each of these a single egg is laid, on which the female sits. The black and white Terns [*S. fuliginosa*] lay a single egg on the bare ground, which is apparently hatched by the heat of the sun, for I never saw one of these birds sitting As soon as the breeding season was over, the number of Terns diminished very considerably; it seems that they assemble in these remote islands for breeding, and fly off to continents and larger islands for the remainder of the year."

In full breeding plumage both sexes (which are similar at all corresponding ages) have the centre of the forehead, with a stripe extending to over, but not beyond, the eye, the sides of the head and neck, the chin, throat, breast, and under surface of the wings, pure white; under tail-coverts, abdomen and flanks, greyish-white; the loreal stripe, which quite encircles the eye, the head, and the

entire upper surface, sooty-black; the forked tail sooty-black, the outermost feather on each side white, with the exception of the terminal half of the inner web which is greyish-black; bill, legs and feet black, the web between the inner and the middle toe but little excised. Length 16 to 17 inches; ridge of bill 2.0; wing 11.70; tail 7.5, and its fork 4.1; tarsus 0.92.

The Sooty Tern forms no nest, merely scratching a hollow in the sand or on the bare ground, in which generally a solitary egg is laid, although two and three have been found in one nest. These are smooth and shining, of a white or bluish-white ground-colour to a warm buff, with markings, very variable in amount, consisting of spots or blotches, red-brown or purplish-grey in colour. In dimensions the eggs are about 2 inches in length by $1\frac{1}{2}$ inches in diameter.

The chicks are, like those of other Terns, hatched covered with down, which is of a brown colour, tipped with white above; and with the breast and under surface white. "When half fledged," as Mr. Saunders writes, "the feathers of the mantle are blackish, with broad white tips, which gradually wear down. When the bird is fully fledged these white tips are much narrower, the feathers of the upper parts are sooty-brown, and the under parts are also of a somewhat paler brown, becoming lighter towards the vent; bill and feet reddish-brown."

The immature birds have their sooty plumage suffused with brown or grey, but much paler underneath; the upper wing-coverts have white tips; the tail is only slightly unequal, instead of being forked; and its outer feathers have their external webs brownish.

The winter plumage of the Sooty Tern is hardly distinguishable from that of the summer, but on the crown of the head and in the black loreal streak there occur a few white feathers.

These birds are "wonderfully powerful flyers, and must at times be for many days on the wing. Even whilst catering for their young they are supposed to travel great distances, as Mr. Gill, whilst one day at the largest 'fair' [on Ascension] caught a bird in his hand with a small fish in its beak, which was not recognized as an inhabitant of Ascension waters. This bird must have been fishing at some distance" (Penrose).

After their duties of incubation are over these Terns take their departure, and disperse along the coasts of the continents that may be nearest to them.

*Family—LARIDÆ.**Subfamily—STERNINÆ.*

LESSER SOOTY TERN.

Sterna anæsthera, SCOP.

A SPECIMEN of this Tern—and the only one known to have reached the British Islands—was taken at one of the light-ships, at the mouth of the Thames, in 1875.

*Family—LARIDÆ.**Subfamily—STERNINÆ.*

NODDY.

Anous stolidus, LINN.

ONLY three specimens of this tropical Tern have been taken in Great Britain, or, indeed, in Europe. Two were shot in Ireland in 1830, and the third on the Dee Sands, Cheshire, in 1891. The latter is preserved by Captain Congreve, Burton Hall, Neston, Cheshire. It is said that the species appears occasionally also in St. George's Channel.

The forehead white, the crown ashy-grey; sides of the head, the throat, with the upper neck and under wing-coverts, sooty-brown, tinged with grey; the lores and feathers round the eye greyish-black; rest of the plumage sooty or chocolate-brown; tail and primaries blackish-brown; bill black; legs and feet dull reddish-brown,

the webs darker, the claws black. Length $14\frac{1}{2}$ inches; wing 11 inches; tail $5\frac{3}{8}$; tarsus 1 inch. Both sexes are alike.

“The Rocks of St. Paul’s, nearly under the Equator, in the Atlantic Ocean,” as Mr. Darwin observed, “were almost covered with the rude and simple nests of this bird, made with a few pieces of sea-weed. The females were sitting upon their eggs (in February) and by the side of many of their nests part of flying fish were placed, I suppose, by the male bird for his partner to feed on during the labour of incubation.”

Family—*LARIDÆ*.

Subfamily—*LARINÆ*.

SABINE’S GULL.

Xema sabinii, J. SABINE.

THIS very beautiful Gull was first recognized as a British species by Mr. W. Thompson, author of the “Natural History of Ireland,” in 1834, when he exhibited, before the Linnean Society, a specimen shot in Belfast Bay, in 1822, which had been, however, previously shown before the Natural History Society of Belfast, in 1833, under the name of *Larus minutus*.

Since that date it has been taken many times, generally in autumn, both in England (chiefly on its southern and south-eastern coasts) and in Ireland on its eastern side. From Scotland it has been more rarely recorded, though it has been captured in at least four instances. The first specimen was shot in October, 1877, on the Firth of Forth, and the second was picked up near the Loch of Sarclet, Caithness, in June, 1885—a “lovely” adult in summer plumage. A third adult bird was shot on Loch Spilvie, in Mull, in September, 1888; a fourth, but immature specimen, was caught at Slidery, Arran, in September, 1897, and presented to the Edinburgh Museum of Science and Art, by Mr. John Paterson.



SUMMER

SABINE'S GULL ♀

IMMATURE

This species derives its trivial name from Captain Sabine, who discovered it on the west coast of Greenland, during the North-West Passage Expedition, of which he was so distinguished a member.

Sabine's Gull is an arctic and sub-arctic breeder, not nesting, however, lower than about 72° N. latitude. During the winter it migrates to less severe regions. In the eastern hemisphere it is found on all its northern coasts and islands, except Novaya Zemlya and Franz-Josef Land; in the western hemisphere it descends along the Atlantic coasts nearly to the Tropic of Cancer, and on the Pacific side as far as 12° S. latitude.

In its summer or breeding plumage, the female is in every way similar—as it is also in size—to the male. The entire head to below the nape, and down in front to the upper breast, slate blue circumscribed by a distinct narrow border of deep black; the lower neck down to the upper back white, washed with pale lavender; the whole of the under surface of the body below the collar, the rump, the upper tail-coverts and the tail pure white; the back, the wing-coverts and inner secondaries (the tips of the latter and the greater wing-coverts, to more than half their length, white) lavender-grey; the outer lesser wing-coverts, the primary-coverts, and the outer five primaries, black (giving a black edge to the whole external margin of the wing); the primaries are tipped with white, “having the inner half of the web longitudinally white, but this not reaching to the end of the quill on the first five primaries; the black much diminished on the next two primaries; the inner primaries and the secondaries being white” (Sharpe); bill black at the base, above and below; yellow on the anterior part of the upper, and orange on the corresponding part of the lower, mandible; a vermilion ring round the eye, with a white spot below it; legs and feet blackish-brown. Length 13 inches, ridge of beak $1\frac{2}{5}$; wing 11; tail $4\frac{1}{2}$ (fork $\frac{9}{10}$); tarsus $1\frac{1}{2}$; middle toe and its claw $1\frac{2}{5}$.

In examples a year before reaching maturity, writes Mr. Howard Saunders, “the white tips to the outer primaries are less conspicuous, and there is a considerable amount of black on the sixth primary from the outside.”

Sabine's Gull builds about the middle of June or the beginning of July, laying its eggs sometimes on the bare ground, sometimes in a slight depression made by its body, among such scanty herbage, growing or collected, as the region it has selected can provide. The birds nest together in small colonies, a few feet distant from each other, often in association with Terns. Sir John Richardson records that this Gull was breeding on an island where he was camped, and that the eggs were laid in hollows on the short mossy turf. They rarely exceed two in number, and are a little over $1\frac{1}{2}$ inches in length by $1\frac{1}{4}$ in breadth. In ground-colour

they are dull brownish-olive, blotched with reddish-brown, or spotted with indistinct dull brown, more abundant in some examples at the larger end, though as a rule pretty evenly distributed over the egg.

The young, which are hatched towards the end of July, are covered with down, reddish-yellow on the upper side, greyish-white beneath, and spotted all over with black.

In about a month after leaving the egg, the young birds are fully fledged, and have, according to Mr. Saunders, the forehead dull white; the head grey, mottled with buff; feathers of the upper parts ash-grey, with the margins buffish at first and becoming greyer as the bird grows older; tail feathers broadly tipped with black; under parts chiefly white; on the sides of the neck an ash-brown band, which is seldom complete and very variable in extent; bill horn-brown; legs and toes flesh colour to brownish.

As is the rule among the *Larinæ*, young Gulls do not reach maturity so soon as young Terns, but take several years to attain to their fully adult plumage. The slate-grey and the ashy colour on various parts of the body, which are marks of the young bird, become less year by year, till they finally disappear.

The adult in winter, as described by Mr. Saunders, is similar to the adult in breeding dress, but the head is white, with grey streaks, which coalesce on the nape and hind neck, producing a greyish-black appearance; the quills are worn and faded in colour, and their tips abruptly broken off, as if cut artificially, the bill is duller in colour and the tarsi brown. "By the beginning of April," he adds, "the new primaries, with broad white tips, are fully developed, and the head is plentifully sprinkled with slate-grey."

Sabine's Gull differs from all other Gulls, except the Little Gull, in having a forked instead of a square tail. In this character it approaches the Terns; as it does also in manner of flight.* It rarely plunges into the water, as Gulls are in the habit of doing, but hovers gracefully close over the water to pick up a morsel, or alights for an instant in the water and rises again on the wing so lightly that scarcely a ripple is made on the surface, as Mr. E. W. Nelson has related from observations made by him on this species in Alaska. In other habits, as described by the bird's discoverer, Captain (afterwards Sir Edward) Sabine, *Xema sabini* resembles a Tern. "They flew," he says, "with impetuosity towards persons approaching their nests and young, and when one bird of a pair was killed, its mate, though frequently fired at, continued on wing close to the spot where it lay.

* Mr. Abel Chapman, as long ago as 1886, pointed out that the tail of the Little Gull, in *immature* plumage, "is distinctly forked, shewing an affinity with the Terns," (Zool. 1886, p. 457). We have repeatedly verified this observation.—H.A.M.

They got their food on the sea-beach, standing near the water's edge, and picking up the marine insects which are cast on shore."

This Gull feeds not only on the coast, but in brackish pools which may be some distance from the sea, where they find small fishes and crustaceans.

As noted at the beginning of this article, Sabine's Gull has been seen most frequently on the southern and eastern coasts of England, and only on the eastern side of Ireland. Mr. Gurney expresses his belief that the appearance of this Gull and many other North American birds, on the eastern instead of the western aspects of the British Isles, which are nearer to the United States, is due to the *west* winds of autumn, which these birds love to fly *against*. "Certainly if it were not for the west wind," he says, "there would not be that annual east-to-west autumnal migration which there is to Norfolk and on the east coast of England generally. The direction taken by the birds would be changed if the prevailing winds blew from any other quarter than west, for they like flying against it, account for it how we may, though it is not to be denied that there are now and then exceptions."

Family—LARIDÆ.

Subfamily—LARINÆ.

WEDGE-TAILED GULL.

Rhodostethia rosea, MACGILL.

THE Wedge-tailed Gull is the most beautiful, perhaps, of all the Gulls. It is with much regret, therefore, that we must admit that its claim to a place among the birds of the British Isles is very slender, for there is but one record of its having been taken within our area—in Yorkshire—and that as long ago as the year 1846. It is a bird, however, which has long attracted great interest; for till quite recently nothing was known of its history, and many were the conjectures

as to what that mysterious country, in which it spent the summer and brought forth its brood, might prove to be. That it nested in very high latitudes appeared certain, and on this fact it was firmly held by many that there *must* be islands or considerable masses of land in the neighbourhood of the North Pole—a theory dispelled by Nansen's investigations.

The Wedge-tailed Gull is often known also as Ross' Rosy Gull, after Sir J. C. Ross, the intrepid navigator, who discovered it, in 1823, on Melville Peninsula (between 60° and 70° N. latitude), during his Arctic Expedition. The bird had, however, been brought to Europe from Greenland by Giesecke, and acquired, in 1818, by the Imperial Museum in Vienna, where it remained during that interval undetected and undescribed.

The distribution of this rare Gull is still imperfectly known. It has, however, been recorded from Melville Peninsula, in latitude 69° 30' N., and from Boothia, across by Greenland, to the Færoe Islands.* It has been reported, by Parry, in 82° N. latitude on the meridian of Spitzbergen; and it had been shot, according to Lieutenant Payer, near Franz-Josef Land. The zoologist of the *Jeannette* expedition shot eight specimens, near the 27th parallel, three of which he brought back with him, despite the hardships of the terrible journey, which he and his companions made across the ice, after the loss of their vessel in 1881. Beyond the bird's occurrence in these few localities, nothing was known of the region of its nativity till the return of Dr. Fridtjof Nansen, from his celebrated expedition across the arctic circumpolar seas, and its life history remains still known only to the bird itself.

When the *Fram*, as Nansen records in his "Farthest North," was in about 81° 40' N. latitude, and 120° E. longitude:—"On August 3rd [1894] a remarkable occurrence took place; we were visited by the Arctic Rose Gull (*Rhodostethia rosea*). I wrote as follows about it in my diary:—'To-day my longing has at last been satisfied. I have shot Ross' Gull—three specimens in one day. This rare and mysterious inhabitant of the unknown north, which is only occasionally seen, and of which no one knows whence it cometh or whither it goeth, which belongs exclusively to the world to which the imagination aspires, is what, from the first moment I saw these tracts, I had always hoped to discover, as my eyes roamed over the lonely plains of ice. And now it came when I was least thinking of it. I was out for a little walk on the ice by the ship, and as I was sitting down by a hummock my eyes wandered northwards and lit on a bird hovering over the great pressure-mound away to the north-west. At first I took it to be a Kittiwake, but soon discovered it rather resembled the

* Dr. L. Stejneger recently received a fully adult example of the Wedge-Tailed Gull, from Bering Island, where it was obtained on December 10th, 1895.—H.A.M.

Skua by its swift flight, sharp wings and pointed tail. When I got my gun there were two of them together, flying round and round the ship. I now got a closer view of them and discovered that they were too light coloured to be Skuas. They were by no means shy, but continued flying about close to the ship. On going after them on the ice I soon shot one of them, and was not a little surprised, on picking it up, to find it was a little bird about the size of a Snipe; the mottled back, too, reminded me also of that bird. Soon after this I shot the other. Later in the day there came another which was also shot. On picking this up I found it was not quite dead, and it vomited up a couple of large shrimps, which it must have caught in some channel or other. All three were young birds, about twelve inches in length, with dark mottled grey plumage on the back and wings; the breast and under side white, with a scarcely perceptible tinge of orange-red, and round the neck a dark ring sprinkled with grey. At a somewhat later age this mottled plumage disappears; they then become blue on the back, with a black ring round the neck, while the breast assumes a delicate pink hue.' ”

“ It is,” adds Dr. Nansen, “ without comparison, the most beautiful of all the animal forms of the frozen regions Although it was too late in the year to find its nests, there could be no doubt about its breeding in this region.”

This comparatively insignificant—considering the object of the expedition—and accidental discovery of the nesting place of Ross' Gull, was by no means one of the least interesting and gratifying of the achievements of Dr. Nansen's expedition. This bird was not observed by the explorers—Nansen and Johansen—between this point and the highest latitude reached by them; and on their return journey only when they approached the corresponding latitude, 82° 84', in the longitude of about 63° E.—near the islands they named Hviteland—did they again meet with it. The further south, toward Franz-Josef Land, they came, the more abundantly was it seen. It is rather surprising that it has not yet been recorded from Spitzbergen, to the south and west of which it has been often taken.

The Wedge-tailed Gull—so named from the form of its tail, which is unique among the *Larina*—has, when in full plumage, the back, shoulders and wings pale lavender-grey, the latter somewhat darker; external web of the outer primary black, almost to the tip; the inner primaries and the secondaries have white terminations, which form an alar bar when the wing is closed; a black ring encircles the neck, narrower in front than behind; the rest of the plumage white, suffused, during life, on the under surface with a rich warm flush of rose-red; the wedge-shaped tail, rump and upper tail-coverts white, flushed with rose in life; the bill dark corneous, and feathered to the nostrils; the legs and feet bright scarlet. Length 12½ inches; wing 10½; tail 5; tarsus 1½.

During winter the Gull loses the black neck-ring and much of its roseate hue.

The nest, the eggs and the chicks of this bird are quite unknown. The birds obtained by Nansen, and described by him in the extract quoted above, were immature. A young bird has been described by Saunders in the XXV Volume of the "Catalogue of Birds in the British Museum," as being similar to the immature but with the crown distinctly pearl-grey, with sometimes a dark feather or two indicative of a hood, and also an approach to a greyish collar; more black about the orbits, and a strongly marked patch over the ears; more blackish on the wing-coverts; rump barred with brown; tail feathers with blackish-brown tips to all except the outer pair. "This dark band," he continues, "decreases rapidly with advancing age in the feather, and by the following spring it is almost confined to the two central pairs of rectrices."

Gätke describes a specimen, shot on Heligoland, as having, in the fresh state, "the head, neck and all the lower parts, as well as the tail, tinged with a beautiful rosy red, this colour being particularly rich on the breast, and also penetrating the soft bluish-grey colour of the feathers of the back, especially on the shoulders, quite similar to what one sees in the same parts in old males of the Northern Bullfinch (*Pyrrhula major*) from the East."

Specimens of this Gull are not at all common in collections. The British Museum can show about half-a-dozen; there is one in the Leeds Museum; one in the Edinburgh University collection, and one in the Liverpool Museum. The latter, which has been before us in drawing up the above description, and has been figured by Dresser in his "Birds of Europe," was obtained in 69° 30' N. latitude, at Alagnak, in Melville Peninsula, on June 23rd, 1823. The Edinburgh specimen was taken on the 27th of the same month and year, and in the same Peninsula.



SUMMER

BONAPARTE'S GULL ♂ ♀

WINTER

*Family—LARIDÆ.**Subfamily—LARINÆ.*

BONAPARTE'S GULL.

Larus philadelphia, ORD.

THIS beautiful little Gull is a strictly North American species, which has, probably by "circumstances over which it has no control," been driven, rather than voyaged of its own will, to this side of the Atlantic Ocean. Eight or nine specimens have, however, been taken in the British Islands—the majority in the south or south-east of England; thrice it has been taken on the eastern coasts of Ireland, and once on Loch Lomond, in Scotland. Heligoland is the only other part of Europe in which it has been observed, "during the severe winter of 1845, the bird having been in winter plumage with beautiful red feet." No example of the bird appears to have been recorded in this hemisphere since 1870.

Bonaparte's Gull inhabits and breeds in the Fur countries—the semi-arctic region of North America, extending from the Atlantic to the Pacific, its range reaching to the arctic circle. In autumn it migrates southward, and is found from mid-autumn through the winter in the Bermudas along the Atlantic sea board to the Gulf of Mexico, and as far as California on the Pacific side. It lets the spring be well over before it starts back to its bleak northern breeding grounds, where it spends no longer time than to perform this call of nature.

Both sexes of this Gull are similar in size and plumage. In full summer garb they have the hood on the head dark greyish-black, with a white broken ring round the eyes; back and sides of the neck, throat, under wing-coverts, edge of wing, the primary coverts, the tail, and the entire under surface, pure white; mantle pale lavender-grey; "the first primary white, except on the outer web and across the tip, where it is black; the second is black only across the tip and for a little way up the margin of the inner web; the third and fourth with small white tips, broad black subterminal bars, and much pearl-grey above on the inner webs; the remaining primaries grey, with subterminal bars up to the seventh, where the bar is broken, while on the eighth there is merely a dark margin to the inner web" (Saunders); bill black; legs and feet red. Length 13 inches; wing $10\frac{1}{2}$; tail $4\frac{1}{2}$; tarsus $1\frac{1}{2}$; middle toe with its claw same as the tarsus.

Bonaparte's Gull mates by the end of May, and has begun to nest—in colonies

—before the middle of June. “One of the most peculiar and interesting facts,” writes Seebohm, “in the history of Bonaparte’s Gull is its singular manner of nesting. Though obviously so closely allied to the Little Gull and the Black-headed Gull, it seldom appears to make its nest on the ground in a swamp, but generally on tall trees and bushes up to twenty feet from the ground.” The nest is composed of sticks with a lining of dry moss and lichen; and in it are laid three dark olive-brown eggs, evenly spotted over with reddish- and greyish-brown spots, in size about 2 inches long by $1\frac{2}{3}$ in diameter. From them, in some three weeks time, there emerge fluffy balls of yellowish down, spotted with brown. When the young are fledged they don a dress much mottled and marked with brown on the back, and having the crown brownish-grey. As the birds become older the brown becomes somewhat lighter, but very marked on the wing-coverts and secondaries; tail with a subterminal band; brownish-black bands on the primaries; bill pale corneous. These markings continue for two or three years, becoming less and less, however, till, in its third and sometimes its fourth spring, the Gull attains its full plumage, and is ready to begin to breed. Every winter, thereafter, the dark hood is lost and replaced by grey-mottled-white feathers, darkest over the ears.

“Go where we may in North America,” writes Coues, “this pretty bird may be seen at one or another season, if we are not too far from any inconsiderable body of water. The Gull holds its own from the Labrador crags, against which the waves of an angered ocean ceaselessly beat, to the low, sandy shores of the Gulf, caressed by the soothing billows of a tropical sea. It follows the sinuosities of the two coasts with wonderful pertinacity, making excursions up every bay and estuary, and threads the course of all our three great rivers, while performing its remarkably extensive migrations.” While in North Carolina, Dr. Coues observed these birds, in spring, on their northern migration. “From the first of April to the twenty-second great numbers were over the bay, with a decided preponderance of full plumaged individuals. Then without any marked change in the weather or other apparent cause, none were to be seen for a week or ten days. The first week in May, however, they became more numerous than ever, and what seemed singular, the last lot was entirely composed of young birds . . . Evidently the old birds, hurrying north to breed, led the van, and the young, with no such important business on hand, came trooping leisurely in the rear. The question was, what would these young birds do the ensuing summer? would they reach the boreal regions to which the great majority of the perfect fertile birds repair, after loitering so late on the Carolina coast? or did they only propose to go part way, spend the winter frolicking, and return with soberer intentions for another year? I doubt that any breed until they are full plumaged.”



JUR. AUTUMN

LITTLE GULL ♂ $\frac{1}{2}$

SUMMER

*Family—LARIDÆ.**Subfamily—LARINÆ.*

THE LITTLE GULL.

Larus minutus, PALL.

THE Little Gull—which is the smallest of all the Gulls—is, notwithstanding the goodly number of records of its occurrences from various parts of the country, a comparatively rare bird in the British Islands. Almost every year, however, one or two specimens reach our shores.*

It was first recognized as a British species in 1813, by the astute ornithologist, whose name we have already more than once mentioned—Colonel Montagu, who described it in an appendix to the Supplement to his “Ornithological Dictionary.” “This is another bird,” he writes, with much apparent satisfaction, “which has fallen to our lot to record in the British Fauna. It was shot on the Thames near Chelsea.”

The Little Gull visits our shores only on passage to and from its breeding stations, which lie to our north and east, and appears, as a rule, in little flocks, generally on the eastern coasts, mainly of England, although it has been taken in Ireland on several occasions, and more rarely in Scotland. The bird is more common in Eastern Europe. Its breeding haunts are lakes and marshes across Northern Europe and Asia, between the arctic circle and the 55th parallel of north latitude; but it does not enter China. When the breeding season is over, the Little Gulls migrate for the winter south-westward (a course which brings them against our eastern coasts of Northumberland, Yorkshire and Norfolk, on their way still further south), and southward as far as the Mediterranean and the Caspian.†

The male and female are alike in size and plumage. In their breeding dress, they have a deep black hood, sharply defined from the lower parts; the hind neck, the mantle (which has a flush of pearl-grey), the rump, upper tail-coverts and tail are pure white; the throat and entire under surface rich pinky-white; the back, scapulars, upper wing-coverts and wings delicate lavender-grey;

* A remarkable influx of Little Gulls occurred on the East Coast, in February, 1870; at least sixty individuals were killed in Norfolk in that month (*cf* “Birds of Norfolk, vol. iii., p. 321).—H.A.M.

† The majority of the Little Gulls which are obtained on the British coasts prove to be in the plumage of the *first winter*; birds in nest dress are of rare occurrence on our shores. But we have handled specimens killed in Britain, in almost every month of the year, and their plumage varied according to the season.—H.A.M.

the "quills very broadly edged with white, and darkening to smoke colour towards the margins of their inner webs; under sides of the quills nearly black, except at the tips; under wing-coverts dark smoke-grey" (Saunders); bill dark red; legs and feet bright scarlet. Length $7\frac{3}{4}$ inches; wing 9; tail $3\frac{2}{3}$; tarsus $1\frac{1}{2}$; middle toe with its claw $1\frac{1}{2}$.

One of the largest breeding places of this Gull is near Lake Ladoga, in Russia, where, frequently in association with the Common Tern, they nest in considerable colonies in marshes, where there are many floating islands. The vegetation, partly decayed and partly still growing, forms excellent sites for the nests, which are often placed close together. The nests are composed, as well as lined, with dead vegetable fibres, and therein the bird deposits from two to four olive-brown or greyish-brown eggs, with chocolate or blackish-brown spots or blotches, varying in size from $1\frac{1}{2}$ to $1\frac{3}{4}$ inches in length by $1\frac{2}{3}$ to $1\frac{3}{4}$ in diameter. These eggs are so like those of the Common Tern, with which they nest in the same colony, as to be "absolutely indistinguishable" from them; so that the only way to be quite certain that one has collected the eggs of the Little Gull is to take them from beneath the bird, or from a nest off which it has been seen to rise, and this may be more easily done with the present species than most others, for it is far less timid than the majority of Gulls.

The eggs (which are incubated by both parents) are laid in June, and before the end of July they are mostly all hatched out. The young emerge covered with dark yellowish down, spotted above with dark brown. By the third week in August—the young being all on the wing—the whole colony will have started on its southern migratory journey.

The plumage of this Gull undergoes nearly the same phases as the other species which assume a hood during the breeding season. In the full-fledged bird the head and back are dark brown, with white tips; later on as the bird grows older, the forehead, part of the cheeks, the throat, a line over the eye, the under side of the wings, the rump, the under surface (except for some brownish feathers on the breast) are seen to be white; the rest of the head is brown (the hind head and ear-coverts darker); the bill is blackish; the legs orange-red; the back and wings blackish, the coverts of the latter tipped with white or greyish-white; the primaries very dark brown, tipped with white; the tail white, but having a broad terminal band of black. The blackish feathers on the back gradually give place to grey and lavender grey; the tail band becomes less and less on the feathers from out inwards, and from the tip downwards; then partly by moult, partly by pigment changes in the feathers, the wings lose (much more gradually) their dark brown and become grey; the under side of the primaries change to greyish-black

and the under wing-coverts to dark grey. This dark under side to the wings—the sign of maturity—is attained in about their second autumn. It is not, however, till the third spring that, as a rule, the Little Gull puts on its first nuptial dress. Early in the year the pearly feathers of the neck become black. “This black colour,” according to Gätke, “first makes its appearance on the shaft of each feather, and then spreads in the form of a fine black dust over the remainder of its surface. In the feathers of the under side of the head, the fore-neck and sides of the neck, which in the winter are pure white, the alteration of colour commences at the external tips of the bands of each feather, the deep pure black colour appearing there in the form of fine specks, which at first form a fine black edge around the tip of the feather, and finally overspreads its whole surface. This alteration of colour, from perfectly pure white to deepest black, commences simultaneously at the lower border of what is subsequently the black marking, and gradually extends upwards, so that in the end the part known as the chin is the only spot where the white colour is still apparent.” Then after breeding it changes into its first winter garb, in which the rich black hood is entirely lost, the head becoming white with a few patches of blackish-brown, especially marked on the ear-coverts; the breast shows a pinkish flush on the white; the bill, legs and feet are less brilliant.

Both in their spring and in their autumn migration Little Gulls are to be seen in many parts of the continent in large flocks, such as Mr. Huddleston has described, as observed by him in the Dobrudscha, where they were frequenting a lake of fresh water. The flocks of *Larus minutus*, which were associated with *Sterna cantiaca*, were “literally swarming in the air a few feet above the surface of the water, like Swallows over a river on a summer’s evening. Far as the eye could reach, looking northward down the lake, these elegant little birds were to be seen on the feed, dashing to and fro most actively In the distance they looked like mosquitoes over the water, the flocks probably extending to the furthest end of the lake, which cannot be less than eight or ten miles off A few days later the thousands had become hundreds; yet a few days more and these will have dwindled down to tens; so that by the middle of May it is possible that not a pair will remain behind.”

The habits and flight of the Little Gull are not unlike those of Terns; it frequents marshes and inland fresh waters, and hawks for insects—dragon-flies, May-flies, etc.—catching them on the wing.

“All the Gulls,” writes Gätke, “leave their northern breeding stations before the approach of winter, to betake themselves to more temperate latitudes. In the case of none, however, does this movement so much partake of the nature of a

true migration as in that of the present species. Long-extending flights of these pretty little birds may be seen travelling over the sea past the island [Heligoland] at the close of September and during the first half of October. Their movements, however, are quite different from what one is accustomed to see in the case of most migrants. Companies of from one to two hundred individuals travel in motley throng quite low over the sea, continuously dropping to the surface to pick up food. All the time, however, they rigidly maintain their western course of flight and, speeding along with great rapidity, are very soon lost to sight. . . . While roving over the sea in all directions in search of food, they execute many rapid beats with their wings, continuously displaying at the same time the peculiar greyish-black colour of their under sides."

Family—LARIDÆ.

Subfamily—LARINÆ.

BLACK-HEADED GULL.

Larus ridibundus, LINN.

THE Black-headed Gull is a true British species, breeding in all three islands, and many individuals spending the winter also on our coasts. It is found nesting throughout the whole of Europe, north to the Færoes, and across all northern temperate Asia to Kamtchatka. In winter it migrates south to the Red Sea, to Northern Africa and down the west coast. It finds its way also to the Persian Gulf and to India, and even to the Philippine Islands, perhaps, by way of Eastern Asia. It is unknown on the western hemisphere.

In the British Islands it is widely distributed, being found on the coasts and on inland lakes and marshes, which it specially affects. It forms large colonies, often called "Gulleries." The largest and most important in England are at Scoulton Mere, in Norfolk; Cockerham Moss, in Lancashire, and Walney Island,



BROWN-HEADED GULL ♂
(*Black-Headed Gull*)

Black-headed is a misnomer as this species has no black on the head, the head is greyish-brown. *Black-headed* would apply to the Little Gull, the Mediterranean *Black-headed* Gull, and the Great *Black-headed* Gull, all three species having pure deep-black heads.—F.W.F.

off its coast. In Ireland it nests on the islands near Enniscoe and Errew; in Lough Conn and Lough Carra, Co. Mayo; in Killeenmore Bog, Tullamore, and in many of the less disturbed bogs in a score of counties. In Scotland it occurs in large colonies in many of the lochs on the mainland, in Orkney and Shetland also, and in the Western Isles.

Scoulton Mere, in Norfolk, according to Mr. Seebohm, is about one hundred and fifty acres in extent, with an island in the centre covering some seventy acres, and on this "reservation" the Gulls breed. "The colony," he says, "consists of about eight thousand birds, and is said to be gradually increasing in size. Ten years ago [about 1875] it had dwindled down to less than half that number, in consequence of a succession of dry seasons and reckless shooting in the neighbourhood; but forty years ago [1845] the colony was estimated at upwards of twenty thousand birds Half of them stop at home to sit on the eggs, the male taking his turn when the female is feeding, and the other half are scattered over two or three hundred square miles of ground."

"Of all our Gulleries," writes the Rev. H. A. Macpherson, in the "Vertebrate Fauna of Lakeland," "no one is inferior in interest to that which occupies a few acres of water, half clothed with grass and bog-bean, at Moorthwaite, near Wigton. As recently as 1889, I considered this to be numerically the strongest Gullery in north-west England, a fact that is remarkable because it has no pedigree. It was only founded in 1878, by four pairs of birds. In 1879, thirty pairs of Gulls nested there. Ten years later I calculated that a thousand pairs bred there. Certainly it was an extraordinary sight to witness. Many hundreds could at any time be seen hovering in a white cloud over their nests. The surface of the tarns stretched out before us like a white sheet, so closely were the resting birds massed together; several hundreds formed a white patch on the dark surface of a neighbouring field; many more were constantly arriving with food for their young, gathered for miles round."

The Black-headed—or it would be more correct to call it the Brown-headed—Gull presents the same plumage in both sexes, but the female is in size generally though not invariably, somewhat smaller than the male. In breeding plumage both sexes have the head, as low as the nape and throat, where it is sharply circumscribed, hooded in chocolate brown, the lower margin of the hood almost black; a white ring surrounds the eye; the hind neck, round by the lower throat, the white of the under surface, the wing-margins, bastard wing and primary coverts (these flushed with grey), the rump, the upper tail-coverts and tail pure white—the under surface often presenting a rosaceous flush in the living bird; the mantle, the upper back, the wing-coverts, most delicate lavender-grey; outer

primaries mainly white, "with black tips, and black margins to the inner webs. Shafts of the three outer quills white; the outermost quill white, with a narrow black line along the greater part of the outer web (touching the shaft in all except very old birds), a black tip, and a blackish edge to the inner margin; second quill similar, but with merely a short hair line of black on the outer web; third quill with a trifle more black running upwards from the black tip along the outer web; fourth quill similar, but with a grey centre to the inner web; fifth quill white on both webs, and with a minute white tip; sixth similar, but the tip grey and broader, so that the black becomes a sub-terminal bar; seventh similar, but with less and fainter black; upper primaries grey; secondaries paler grey, without conspicuous margins" (Saunders); bill carmine; legs and feet deeper carmine; ring round the eye scarlet. Length 16 inches; wing $11\frac{9}{10}$; tail $4\frac{1}{2}$; tarsus $1\frac{1}{2}$; middle toe and claw $1\frac{1}{2}$ inches.

The Black-headed Gull breeds in many places in inland localities, often a great distance from the sea—in islands in lakes far removed from habitation, for it is a species easily disturbed and scared away from its breeding places. It does, nevertheless, breed in suitable sites near the sea. Very often it shares "the Grouse moors with the more legitimate tenants." It is particularly fond "of a boggy island, almost inaccessible owing to deep mud and shallow water."

In March this Gull changes its winter dress for its nuptial plumage with the dark hood, and in the month of April it begins to lay, having constructed a well built nest of sticks, grass and reeds, or such vegetable material as the locality affords. The nest may be placed on the ground; in trees at varying heights from the ground; on the sloping roof of a boat shed; or "on a roundish-shaped boulder close to the shore" (Harvie-Brown). When on the ground the nests are often placed so close together that it is impossible, without very great care and circumspection, to put the foot down without treading on a nest. Mr. Harvie-Brown and Sir John Orde have recorded that they have found a nest actually built in the water, in a small creek or bay, in the peat, on an island of Loch an Dune, a tidal arm of Loch Maddy. This species breeds often also in association with the Arctic Tern and Common Gull. The naturalists we have just mentioned have also found the eggs of the Black-headed and the Common Gull, in more than one locality, in the same nest.

The eggs—in size, varying considerably with the age of the bird, about on an average $2\frac{1}{10}$ inches in length by $1\frac{1}{2}$ in diameter—are three to four in number, more generally three, and are extremely variable in colour. The ground colour varies from "pale bluish-green to greyish-buff and brown, spotted, blotched and streaked in almost every conceivable variety, with surface markings of dark brown,

and with underlying markings of greyish-brown" (Seebohm); occasionally they may be of a reddish ochre ground colour, with pale rust-coloured blotches, while often, on the other hand, the various ground colours may be entirely unspotted, and the egg evenly covered as with a fine spray.

During the period the eggs are being produced most profusely—about the middle of May—thousands are taken from the nests for the market, on account of the excellence of their flavour, which is considered almost as good as that of Plovers'. They are boiled hard and eaten cold, just as the latter are.

From about twenty-three to twenty-four days after incubation has commenced, the young chicks appear, covered with a brownish-buff down above, yellowish-white beneath, and having the head, throat and back streaked with black or coffee-brown; they are able to run about as soon as they are out of the egg; indeed they may sometimes be seen trotting off with their hinder regions encased in a buckler of shell. "It is curious to see the craftiness displayed by the young, not, indeed, by the very small ones, but by those which are growing strong. Although they can patter down the slopes of the sand-hills, or run across a shingled beach very fast indeed, they prefer to escape by hiding up. The very little chicks are content to rest quietly in their nest But those feathered hide up and remain so still that it is very difficult to avoid treading on them. The birds which are bred in the neighbourhood of water, and which swim strongly at an early age . . . rarely attempt to escape capture by swimming. If danger threatens they usually run in for shelter to the bank But as the young begin to feather they skulk less and draw together in level places [and eventually] congregate together in parties of twenty and thirty birds until, their pinions growing strong, they leave the nursery on their own account" (Macpherson).

The full-fledged birds have the forehead white, top of head and nape greyish-brown, with a grey patch in front of the eye and over the ear-coverts; throat and under side white; breast and sides of body reddish-yellow; rump and upper tail-coverts white, with reddish-yellow edges; tail white, with black terminal band; mantle and shoulders brown, with yellowish-brown edges, but grey at base; greater wing-coverts lavender-grey, speckled with brown; "primaries as in the adult, with tiny white-brown tips, but with much more black on both webs, the black approaching the shaft; secondaries grey, broadly tipped with white, and with a longitudinal black mark towards the end of the outer web, decreasing in extent on the inner secondaries" (Sharpe); bill yellow, black at the angle; legs and feet reddish.

This plumage has, by December, become modified by the exchange of the brown for a grey mantle; and before it is a year old "more or less of a brown hood is assumed" (Saunders); while at the moult in the following autumn the

dark band on the tail vanishes. In the second spring the bird is preparing to mate, and puts on its nuptial dress; but for some years the brown on the primaries may still be visible, indeed it may be four or five years before they attain the full whiteness of the outer primaries, which characterizes the adult. The brown hood of the breeding bird appears, according to Saunders, as a dark line gradually running "from each ear-patch across the head; later a similar and parallel line grows up from the eyes, so that the head appears to have two narrow bands of dusky grey; then the dark feathers increase between, and lastly they come as in front, till the base of the bill is reached." Saunders and others state that the hood appears by a pigment change in the feathers and not by their being truly moulted. This is denied by Mr. Tait, who observed birds in Portugal in all stages of changing, from the white to the black feathers, and found new ones to be springing up already black in their sheaths among the white feathers. It is probable that both observers are correct; for it may be that in young birds, which are assuming their hood for the first time, the dark feathers may come in new; but in older birds the hood may be assumed by a pigment change in the feathers only. It is to be remarked, however, that, in other birds, where the main change is one of pigment, there do come in, as the present writer has observed, a few by true moult as well. After the birds have reared their brood, there then commences the true moult of the year, the result of which is the Gull's winter dress, in which the dark hood has entirely disappeared, leaving the head white, except for a grey patch on the ear-coverts and one in front of the eye; while the rosy tint of the breast is much fainter.

On the completion of their parental duties, the Black-headed Gulls leave their breeding places and move towards the coast, accompanied by the young birds. Later in the season many of them migrate further south, large numbers, however, spend the winter with us, however severe it may be. The present writers will not soon forget the interesting sight which they were fortunate to witness during the severe frost of February and March, 1895, when Black-headed Gulls, young and old, were in thousands on the Thames, between the London bridges; now flying in circles, with noisy cries, on the look out for food thrown to them, or resting on the blocks of floating ice which were being carried down by the tide. "This unusual sight was viewed," as recorded in the "Field" of that date, "by crowds of people, who forgot the cold in the fascination of watching these birds, among which numbers of Terns, Kittiwakes, and Herring Gulls were associated. Not only on the Thames but on the ponds in the various parks, where the water was kept open purposely to allow the water-fowl there domesticated to feed, all these birds congregated to the great delight of thousands of Londoners, to many

of whom these sea-birds were anything but familiar, and in many cases quite unknown."

The Black-headed Gull in summer feeds on insects, and especially moths, which it hawks on the wing. But it will pretty well eat anything, newly sown oats, flesh, fish, crustacea, and especially grubs and worms, which they follow the plough or the harrow in spring, often as many as a hundred in a flock, frequently in company with Rooks, to pick up as these are turned out by the husbandman's operations. On such occasions they exhibit very little fear, and will follow close on the ploughman's heels.

The Black-headed Gull can be distinguished in winter while on the wing—where Gulls are very difficult to determine—by its red legs, its mottled shoulders, the dark spot on the side of its head, and the broad bar across the extremity of its square tail. It can be distinguished also from the Little Gull—which it resembles—by its larger size and greater length. The darker bill of the Little Gull and the darker under side to its wings serve also as differentiation characters.

Family—LARIDÆ.

Subfamily—LARINÆ.

MEDITERRANEAN BLACK-HEADED GULL.

Larus melanocephalus, NATTERER.

THE Mediterranean Black-headed Gull has a place in the British list from the fact that an adult example, in winter plumage, was shot on Breydon Broad, in December, 1886. The British Museum had previously purchased a specimen said to have been shot, in January 1866, in Barking Creek, on the Thames. Its habitat is the shores of both sides of the Mediterranean, the Black Sea, and the Atlantic shores of South-Western Europe, very rarely higher than 45° N. latitude.

It may be recognized from *L. ridibundus*, if chance should again bring a specimen to our shores, by its harsher Tern-like cry, and by its having the hood really black instead of blackish-brown; the primaries are white tipped, only the first has the narrow outer web black; bill, legs and feet red. Length $14\frac{1}{2}$ to 15 inches.

It breeds in large numbers in the marisma of the Guadalquivir, west of Jerez. Mr. A. B. Brooke, in his notes on the ornithology of Sardinia, notes that by the 15th of March a great number of these Gulls had already assumed their black head [which is of course lost during winter], and the tips of their primaries were pure white; after that date, along the coast of Genoa and Leghorn, where they are extremely numerous, few are to be seen in their winter dress.

“On one occasion,” he says, “I saw a pair commit an atrocious piece of cruelty on an unfortunate small bird (a Wagtail, I think, by its flight), which was vainly trying to overtake the steamer, evidently nearly exhausted, having only sufficient strength left to clear the waves. It was at once seen by a pair of these Gulls that were hovering hungrily round the stern, and they immediately gave chase. After one or two unsuccessful swoops, pluckily and skilfully evaded by the Wagtail, one of the Gulls knocked it into the sea, lighting beside it, got up, and flew away with it in his bill; but he did not go far before he dropped it, and the poor exhausted little bird made a dying attempt to reach the steamer, his only refuge; but it was of no use, as he was almost immediately caught again and killed. I dare say this is by no means an uncommon fate of many of our smaller summer migrants.”

*Family—LARIDÆ.**Subfamily—LARINÆ.*

THE GREAT BLACK-HEADED GULL.

Larus ichthyaëtus, PALL.

THIS Royal Sea-Gull, as Canon Tristram calls the present magnificent species of the hooded Gulls, has a similar claim to a place among the birds of England to the last species. A fine adult bird was shot near Exmouth, in June, 1859, in full summer plumage. Its breeding region is Southern Russia and Central Asia; while in winter it visits the Mediterranean, Northern Egypt, Palestine and India. Canon Tristram records that during winter and spring Gulls were very abundant on the Sea of Galilee. "From morning to night," he says, "they pass and re-pass up and down its short length—the magnificent *Larus ichthyaëtus* in particular making the circuit of the lake close to the edge and always within shot, as though to keep himself in exercise. We got this Royal Sea-Gull in the finest possible plumage in the month of March. Where they go to breed I cannot say; they certainly do not breed in Palestine; probably they take an easy flight to the Red Sea and enjoy their spring among its coral reefs." According to Pallas they probably breed on the Caspian Sea.

This species has in summer a splendid black hood, relieved by a white spot above and below the eye; the whole throat, under side, tail and lower neck pure white; the back, the mantle, the wing-coverts dark lavender grey; the primaries white, with a deep black sub-terminal bar, save the first, which is all black except the tip; bill orange from base to the tip, with a black bar across both mandibles near the tip; legs and feet are rich yellow, with a greenish tinge.

Little is known of the habits of this bird—which is the largest of the hooded species, and by this character easily distinguished from all others. It is also the only one "which has unspotted young" (Saunders).

*Family—LARIDÆ.**Subfamily—LARINÆ.*

COMMON GULL.

Larus canus, LINN.

THE Common Gull is to be found on all our coasts during the autumn and winter; but not alone on the coasts, for it is to be seen often far inland, quite fifty miles from the sea. During the summer no nesting birds are to be met with south of the Scottish border; for its breeding places are confined to Scotland and Ireland, although, according to Seebohm, it once bred—and it may do so again—on the Lancashire coast. In the former country it occupies suitable places from the Solway to the Shetland Isles, and from Aberdeenshire to the Outer Hebrides. In Ireland it is to be seen all round the coast at every season, except during the breeding time, when it is much rarer, as the majority of them go inland to nest.

The distribution of the Common Gull beyond our boundaries extends across Europe and Asia, north of the 50th parallel of north latitude; “on the Pacific side from Kamtschatka to Japan and China” (Saunders). In the winter months it migrates southward as far as the Mediterranean shores, the Persian Gulf and into North Africa; some individuals, however, invariably remain throughout the winter in localities near their breeding stations.

It does not occur on the western hemisphere, where its place is taken by a nearly allied species; but one young specimen of *Larus canus* has, it is recorded, been taken in Labrador, whither it may have got driven from Iceland where the species occurs sparingly.

The Common Gull varies very much in size throughout its range; as a rule, however, the female is slightly smaller than the male; but the seasonal plumages of both sexes are alike. During the breeding season the head, the neck, the upper tail-coverts, the tail and the whole under surface, including the under wing-coverts and axillaries, are pure white; the eye is set off by a scarlet ring; the mantle, the back, and the general colour of the wings, is delicate French-grey; the outermost primary black, grey at the base, with a white sub-terminal bar; the next similar, but the bar smaller; the third also black, with a still smaller bar—or rather spot—the bases of all three increasingly grey; on the remaining primaries



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COMMON GULL ♀

SUMMER

to the sixth the basal grey colour increases, and is broken by a black bar and a white tip; "the seventh quill grey, with a white tip, and with a dark spot on the outer web in all but very mature birds; the remaining quills white terminally and grey basally" (Saunders); the bill, legs and feet greenish-yellow. The average dimensions of a British species—specimens from the Pacific coast of Asia are considerably larger—length $17\frac{1}{2}$ inches; wing $14\frac{1}{4}$; tail, which falls short of the wings by 2 inches, 6; tarsus 2; middle toe and its claw $1\frac{3}{4}$ inches.

The Common Gull is an early breeder. Early in April they have migrated northwards from their winter quarters and sought out their breeding places. They have mated and begun to build before the month is well out, and by the middle of May eggs may be obtained. The breeding ground may be in all sorts of sites; it may be on the sea coast; on an island near the coast; on an isolated and unfrequented islet far from the mainland; or it may be on an inland fresh water loch. The nest may be placed in these sites high or low—on the shore at the sea level; in marshes as elevated as four thousand feet above the sea; or on a cliff, though rarely high upon it; on the turf on a slope facing the sea.

Their nests are often very large, and composed of grass, turf, heather, sea weed, or any sort of vegetable refuse they find handy, and are placed a few together in Shetland, sometimes in company with other Gulls—as the Herring Gull, and with the Arctic Tern—or in vast colonies. The nest is most often found, according to Seebohm, "especially where the colonies are large, in flat open country; . . . and in Norway Collett has known it to breed in the deserted nest of a Hooded Crow, near the top of a pine, not far from a lake. The Common Gull occasionally perches in lofty trees, generally choosing the summit or a dead branch. In the valley of the Yenisei I shot one of these birds after having watched it for some time perched on a branch of a larch."

From two to three eggs are generally laid, very variable in ground colour, from olive- to yellow-brown; and from lighter to deeper shades of green; covered with dots and spots of dark brown, black and purplish-grey. In dimensions they average about $2\frac{1}{8}$ inches in length by $1\frac{1}{2}$ in diameter.

The nestlings make their appearance in June, covered with a light grey down, streaked and spotted above with brown and black, "with a black spot at the base of the bill, apparently characteristic of this species" (Saunders); under side yellowish-grey, rarely spotted. If the nest be on a tree, a cliff, or a place from which they cannot run, the chicks remain in the nest till fledged. If the nest be on the flat they leave almost at once. They are fed by the parents on crustacea (*Ilyale nilssoni* in Norway), insect larvæ and small fishes.

The fully fledged bird has the forehead white; and the region from in front

of the eyes, over the crown to the upper back, down the cheeks and along the sides of the chest to the flanks, with the upper and under tail-coverts, is spotted and streaked with brown; the throat and under side white; the tail white, except for a broad sub-terminal bar of brownish-black; the mantle brownish-grey, variegated and margined with brownish-white; primaries chiefly sooty brown, with paler inner webs; secondaries brown, with grey bases; bill flesh colour, black anteriorly.

By the time the bird is three or four months old, the brown feathers in the back scapulars and wing-coverts have begun to be replaced by the French-grey of the adult. In the coming spring when the Gull moults, or partially moults, probably for the first time, many of the brown feathers in the head and neck, the rump, and upper tail-coverts are exchanged for white, but some streaked ones still remain; more grey appears on the back and wing-coverts, and most of the inner primaries have become grey; bill more flesh-coloured, and the legs and feet yellowish.

After the moult in their second autumn—when over two years old—the birds approximate the winter garb of the adult, in having some brown streaks on the neck; but the sides of the breast, the upper wing-coverts, the under wing-coverts, axillaries and under tail-coverts still retain traces of brown; the tail-bar is much narrowed, being more reduced on the external than on the central feathers; bill and legs greener; the outer primaries want, however, the white sub-terminal spot. Their next moult, when they put on their nuptial dress, at the age of thirty-three to thirty-four months, sees all the brown gone and the primary markings of the adult attained.

After rearing their brood, the young parents assume their first adult winter plumage, which is a resumption of the greyish-brown streaks and spottings on the head and neck; while the legs and feet become paler.

The Common Gull feeds on anything almost that presents itself: fishes—especially young herrings and sand-eels, which it captures on the wing by dropping down on them without plunging beneath the surface—and crustacea of all sorts; among the jetsam likewise of the sea-shore after a storm, they find a feast in the sea-urchins, dead fishes, and even the carcasses of drowned animals thrown on the beach. During winter and spring they roam far inland in large flocks, mainly composed of immature birds, and may be seen feeding by the side of rivers and meres, or following the plough, doing the farmer a good turn by industriously gathering the worms and grubs as they are turned up.

“These flocks,” as Macgillivray writes, “may be met with here and there at long intervals in all the agricultural districts, not only in the neighbourhood of the sea, but in parts most remote from it. Although they are more numerous in stormy weather, it is not the tempest alone that induces them to advance inland;

for in the finest days of winter and spring they attend upon the plough, or search the grass fields as assiduously as at any other time. Frequently they have no companions of other species, but often they mingle with Tarrocks [Black-headed Gulls], and sometimes with Herring Gulls. Should the country become covered with snow they retreat to the shores; but when the thaws have partially exposed the ground they return. At this season they almost entirely desert the more northern sterile parts of Scotland, advance southward, and are dispersed over the whole country." It is occasionally also to be seen in the farmer's newly sown corn fields, taking its reward for its vermin-killing by a moderate toll of grain. The presence of this, and other species of Gulls, at a distance from the sea, is supposed to betoken rough weather coming, or a storm passing not far off the shore, scaring them inland for shelter. The old rhyme runs:—

"Sea-gull, Sea-gull
Sit on the sand,
It's never fair weather
When you come to land."

Wind and stormy weather are supposed also to be portended when Gulls fly high and circle like Rooks—they are "seeking for wind."

During the winter and autumn they congregate in great flocks on the coast, also when disturbed they utter a harsh cry, which is a note of alarm not only to their own kind but to other species of birds that are within hearing. They are good tempered among themselves and have no piratical habits, but live at peace with their neighbours.

The Common Gull is less timid than many of the larger Gulls; it repays kindness or attention by confidence even in its wild state, and in captivity it becomes very tame. Mr. Thompson states that one was induced to follow a steamer from Liverpool to the Isle of Man, by bread thrown out at intervals to it, which it invariably caught on the wing.

The following interesting account of this bird breeding in captivity is from "The Field" of July 8th, 1893. "In the autumn of 1891, a male bird was trapped and placed in the back yard [of a fish-curer, in Peterhead, Scotland]. Next spring a female Gull made its appearance, a nest was made in a corner, two eggs laid and one young one hatched, which is now nearly as big as the parents, and remains with them in the old quarters. Towards the winter the female disappeared, but returned this spring, and the two again made a nest in the old place. Three eggs were laid and three Gulls hatched in twenty-eight days, each bird taking a turn of sitting three hours at a time, day and night. The male bird got so tame that it runs about among the workmen, but the female still shows the character-

istics of its wild nature. In the presence of the workmen it pursues its rearing duties; but at the approach of a stranger it at once rises, sweeps through the air, and makes a dart at the intruder's head. The yard-dog is unmolested, but strange dogs or cats are at once put to flight by the female."

Family—LARIDÆ.

Subfamily—LARINÆ.

HERRING GULL.

Larus argentatus, GMEL.

THE Herring Gull—so named from its being supposed to guide the fishermen to the shoals of herrings approaching the coast, although it is not more given to their pursuit than other species of Gull—belongs to the larger Gulls, and is one of the commonest of our shore birds, and might, with more appropriateness, have been called the "Common" Gull than the bird we last described. It is like most *Larinæ* a gregarious species, and though more numerous at some places than others, there is hardly any district in the three kingdoms where it is not to be seen at some period of the year. As a rule it selects rocky islands and coasts for its breeding stations. In England it abounds—to mention a few only of the larger colonies known to us—on Lundy Island; on the rocks of Holyhead; on the beetling cliffs of Spanish Head, in the Isle of Man; Foulshaw Moss, in Morecambe Bay, and Flamborough Head. In Ireland it is met with on all the rocky headlands and islands off its coast—the Giant's Causeway headlands, Horn Head, the Gobbins, at the entrance to Belfast Bay, and the island of Lambay, off the Dublin coast. In Scotland the Herring Gull occurs abundantly on all the Western Isles, the Orkney and Shetland Archipelago, and along the eastern coast. "The whole circumference of Rum, seems to have become one vast colony of Gulls;



HERRING GULL ♀

. . . . perhaps no island on the coast now contains as many Herring Gulls as Rum does." Ailsa Craig, the Bass Rock, St. Abb's Head, and the Buller's of Buchan are other notable places. It is never safe, however, to count on finding the same sized colony at the same place many years in succession, Gulls resembling Terns in being fickle as to their nurseries, and leaving or returning to them for no perceptible reason.

The breeding range of the Herring Gull extends across the whole of Northern Europe, as far east as the 40th meridian, and along all its coasts down to the 40th parallel of N. latitude. It is found breeding as far north as 78°, along all the indented coast line of the western hemisphere, and inland on the great lakes south to the same parallel as on the European side, but on the Pacific coast it ranges somewhat lower. In winter it migrates to the Mediterranean, the Black Sea and the Caspian, on the eastern side of the Atlantic, and to the 20th parallel on the western.

Although during autumn and winter this species extends its range southward, large numbers reside throughout the year within its breeding limits, except, perhaps, in its most northern portions.

Individuals from different parts of its wide range vary very greatly in size; but the females are, as a rule, of smaller dimensions than the males of their own locality or colony. The plumage of both sexes is alike at their corresponding seasons and ages. In breeding attire fully adult birds have the head, the neck, upper back, sides of head, entire under surface, upper tail-coverts and tail pure white; the back, scapulars and wing-coverts delicate, rather darkish, lavender-grey; scapulars and secondaries broadly tipped with white, showing prominently as a bar across the wings; all the primaries have tips of white, of larger or smaller extent. The markings of the quills are so intricate that we follow Mr. Saunder's authoritative account of them: the first primary which is almost entirely black, except for a narrow grey wedge-shaped spot on the inner web, has a narrow sub-terminal black bar, which in most old birds divides "the white into tip and 'mirror.'" With increasing age of the bird, the "white mirror absorbs the black bar till the latter disappears, leaving the primary pure white from the tip to more than two inches upwards; whilst from above a grey 'wedge' along the inner web gradually eats into the black portion, reducing the width of the black along the inner web to only two inches; the second blackish on both sides of the shaft, with a bar the same as in the first; a white 'mirror'—absent in birds not fully mature—and a grey wedge, which sometimes breaks through and joins the mirror; the third is grey at the base, blackish on the lower part of the outer web and on the sub-terminal bar, grey on the inner web, passing into white at the apex of the wedge;

fourth and fifth the same, the former greyer on both webs; the sixth has no bar; the rest grey, with white tips; the encroachment of the light portions upon the dark ones increases with the age of the bird; the grey wedge on the primaries 'is an important distinction between some closely allied species'; bill rich yellow, with a carmine spot at the angle of the lower mandible; ring round eyes yellow; legs and feet flesh-coloured. Length $23\frac{1}{2}$ inches; wing 17; tail 7; tarsus $2\frac{3}{4}$; middle toe with its claw $2\frac{1}{2}$.

The Herring Gull betakes itself, in large colonies at the middle of April, to its breeding quarters, and having already assumed its nuptial dress (just described) it mates and sets about nest building with much fuss and noise.

The nest of the Herring Gull—often found in the same colony with those of the Lesser and Great Black-backed Gulls—is built, in some localities, mainly on ledges of perpendicular and almost inaccessible cliffs, and rarely on the flat table-lands; in others, as in Uist, where "the islet being uneven and covered with *Luzula sylvatica*, the nests were more diversified than is usually found in flat, grassy islands: nests were perched here and there on ups and downs, and some were composed of heather, some of bracken, and others of *Luzula*." A tree is not an unknown site for this bird to choose for a nursery. If there be turf on the top of large stacks of inaccessible rocks, they will probably prefer that to the ledges of the cliffs, and viewed from a distance, as they sit on their nests, "they look like large flowers among the grass" (Grey).

The nest is often very large—though some individuals make only a slightly lined hollow serve their purpose—built of grass, occasionally sticks, or any vegetable material which they can find conveniently in their chosen locality.

The Herring Gull lays from two to three eggs—in length from $2\frac{1}{2}$ to 3 inches, by $1\frac{2}{3}$ to 2 inches in diameter—very variable in markings and in coloration. Mr. Dresser says that they vary from a moderately light stone to a dark brown, of a somewhat yellowish, hue; but the average egg is of a moderately dark stone colour. They are blotched with very dark brown, the blotches being medium sized, rarely large, and as a rule uniformly distributed over the surface of the egg; mingled with the blotches are a few spots. Occasionally they are suffused and blotched with salmon-pink, or reddish-buff. Mr. Henry J. Pearson, whose visits to the northern shores of Europe for the purpose of investigating the breeding haunts and habits of these birds, writes in a letter to the "Ibis" for October, 1896:—"It has been a doubtful point for some time among British ornithologists, which of the Gull-tribe lays the beautiful eggs suffused with salmon-pink, or reddish-buff, now to be seen in many of our collections During a short visit this year to some of the islands on the north of Norway, I

had the pleasure of observing a Gull on one of these red eggs. Before my arrival two red eggs had been taken from a nest shown to me, and another nest had been made by the same pair of Gulls a few yards off, in which was a splendid specimen. I lay down behind some rocks about sixty yards away, and after waiting twenty minutes a Herring Gull (*Larus argentatus*) walked quietly up to the nest and settled. I watched her through my glasses for some time, and am as sure of her identity as if I had shot and handled her To show how scarce the red eggs are, I may say I went to a large group of islands (ten miles from that first mentioned) where an enormous number of Gulls breed. At the time of my visit 7320 eggs had already been sent to market, and the season was not nearly over. Half of these I estimated to be from *L. argentatus*, yet no red egg had ever been taken on this group of islands. There is an even larger colony of *L. argentatus* at the north end of Fuglö, a well known bird rock, but the Lapps living there say they never find any red eggs." The eggs being of excellent flavour are sent to the market in enormous numbers; and, indeed, in our Western Isles, they are trusted to by the fishermen as a very material part of their support during the fishing season.

The chicks issue from the egg as down-covered squabs, of a greyish-buff or yellowish-white colour, variously mottled with black on the head, back and chest—darker on the head and lighter on the under side. The changes of plumage they assume between the fledgling and the adult stages, when they are ready to breed, that is when the birds are about five years old, are very complicated, and may be quoted from Mr. Saunder's British Museum Catalogue, as no one else can speak so authoritatively on the subject:—

"In the first autumn the upper parts are streaked and mottled with brown and greyish-buff; quills dark umber, with paler inner webs and whitish tips to most; rectrices similar, but more or less mottled with whitish at the bases of the two or three outer pairs; feathers of the upper tail-coverts brown, with whitish-buff tips; under parts nearly uniform brown at first, but afterwards brownish-grey, mottled; bill blackish, paler at base of lower mandible.

"The second autumn the head is nearly white, streaked with greyish-brown; the upper parts are barred with brown on a greyish ground, though no pure grey feathers have yet made their appearance on the mantle; quills paler; tail more mottled with white at the bases of all the feathers.

"In the third autumn the feathers of the mantle are chiefly grey, with some brownish streaks down the shafts; a faint sub-apical spot begins to show on the outermost primary; tail coverts partly white, and the dark portion of the rectrices is much broken up; under parts nearly white.

“In the fourth autumn the sub-apical patch on the first primary is larger, and the quills, from the 5th upwards, are banded with black and tipped with white; tail feathers white, slightly vermiculated with brown; bill greenish yellow basally, reddish-black at the angle.

“At the moult of the fifth autumn, all brown markings are lost the primaries have white tips, black bars and grey ‘wedges,’ though the proportion of dark colouring in the quills is greater than it is in older birds.”

The food of the Herring Gull consists mainly of shore offal, crustacea, and young herrings, the shoals of which they follow in large crowds, dropping down upon the fry and picking them up on the wing, or sometimes when swimming in the midst of them. Their manœuvres during such an occasion are denominated “Play of Gulls,” and to see them hurrying up from all parts, from their nests or resting places, on the shrill call of the scouts that denotes discovery, is a most interesting sight to witness. Mussels and other shell-fish also form a part of their diet, sometimes bolted whole, but often the contents alone eaten after the shell has been broken by dropping it on a rock.

The Herring Gull is very confiding. One of the present writers when on a dredging expedition off the Isle of Man from the Marine Biological Station at Port Erin, during a short interval devoted to lunch, when the vessel was hove-to, was charmed by the tameness of these Gulls, a crowd of which soon collected round. The scraps we threw to them were nimbly picked up, at first with some diffidence, with rather a hurried grab from the surface of the sea, without the birds touching the water with more than the tips of their extended limbs; in a few minutes, however, perceiving our good-will, they came quite close under the stern of our small steamer and fed without fear sometimes, indeed, seizing the morsels thrown them before they reached the water, and often before they were well clear of the ship’s rail.

Half-fledged Gulls are easily reared and domesticated, becoming so attached to the place and people, where they have been brought up and kindly treated as to remain there all their lives, without being pinioned and with no other tie than that of affection. The late Mr. Bartlett has placed on record (Proceedings of the Zoological Society, 1859) an interesting note on a Herring Gull, born in the Gardens in 1857 (of parents also born in the year 1850 in the Gardens), where it remained all the summer and autumn. “At the commencement of the winter he was in the habit of flying about (not pinioned), and occasionally staying away a *day* or *two*, then *for a week or more*, returning again generally about feeding time, and alighting among the other Gulls, and feeding with them. This continued till the end of March, 1858, at which time he disappeared. Nothing more was seen or heard of



IMMATURE ♀

LESSER BLACK-BACKED GULL ♂

him till the middle of November 1858, when, to the delight and astonishment of all who knew him, he returned one afternoon at the usual time, meeting the keeper with the box of food, he followed him to the enclosure where he was hatched, and settling down amongst the other Gulls, took his dinner as though he had never been away, 'not appearing the least shy or wild.'

Family—LARIDÆ.

Subfamily—LARINÆ.

LESSER BLACK-BACKED GULL.

Larus fuscus, LINN.

THE Lesser Black-backed Gull is a British resident all the year round, and nests much more widely within our area than the Herring Gull.

In England the following breeding localities may be mentioned:—coasts of Cornwall and Devonshire; Lundy Island; the Welsh coast; on Teifi Bog, in mid-Wales; the Isle of Man; Walney Island; the Farne Islands—of which "the whole group may be regarded as a huge colony of Lesser Black-backed Gulls" (Seebohm); and also on mosses in Cumberland and Westmoreland.

In Scotland it is rather less common than the Herring Gull, in close proximity to which it often rears its brood. It has nurseries in the Shetland Isles; North Ronaldsay holds the largest colony of the Orkneys; on Dunbar's Stack, near Wick, a colony finds a hospitable summit; little flocks nest on many of the islets of the Hebrides, but less numerously than the Herring Gull; they breed in larger numbers on the west coast than on the east, as undisturbed sites are much more frequent on the wilder archipelagoes of the former, than on the less bold and more cultivated coasts of the latter.

In Ireland this species is also less numerous than the Herring Gull; but it resides at various places round the island—more sparingly on the northern coast

—and breeds in many of the rockier districts, and on the inland lakes. The largest colony known to Thompson was, and is still, we learn, on Rams Island, in Lough Neagh, “where, from the people believing that it subsists on the *Coregonus pollan*, it is called the Pollan Gull, or Lough Neagh Herring Gull, from the names applied to this fish”; Lough Conn, in Co. Mayo, is another of its breeding haunts.

The Lesser Black-backed Gull does not range east of the 50th meridian, but it is found breeding over all Europe west of that line (Iceland excepted), and as far south as the Mediterranean. In winter it migrates from its most northerly nesting haunts; but is found resident in increasing numbers the further south of about the 35th parallel one goes; while large flocks find their way to North Africa and the Persian Gulf, and on the west reach to and beyond the Western Isles as far down the coast of the African mainland as the Gulf of Guinea. It is unknown on the western hemisphere.

The sexes of this species agree in plumage; but in size the female is rather less than the male, and has a somewhat weaker bill.

In its summer or nuptial dress, the Lesser Black-backed Gull is everywhere pure white, except on the back and wings, which are in general colour black—which varies through many shades from pale to deep black; the longest scapulars and the secondaries have white tips which form a very prominent alar bar; quills are nearly black, the first two have a white mirror and bluish-grey bases, on the third the grey becomes a “wedge,” and increases on the succeeding feathers till the black left is only a subterminal bar, which has gradually vanished by the seventh leaving the rest of the quills slate-grey, tipped with white; eye encircled by a scarlet ring; bill yellow, its angle red; legs and feet paler yellow than the bill. Total length 21 inches; wing $16\frac{1}{2}$; tail $6\frac{1}{4}$; tarsus $2\frac{3}{8}$; middle toe with its claw $2\frac{1}{4}$.

This species mates early in the spring of its fifth year. Harting, who visited this bird's breeding stronghold, did not observe there a single individual in the mottled plumage peculiar to the immature bird, and believes that none do breed until the full adult plumage is attained.

In May the Lesser Black-backed Gulls select their nesting place, betaking themselves, as Macgillivray states, “to unfrequented islands, headlands, and sometimes inland lakes [and mosses], often in considerable numbers, and there remain until their young are able to fly, although they make extensive excursions around in search of food.” On the Teifi Bog, in mid-Wales, about twelve miles from the sea, the nests are placed “on slight hillocks, generally in deep heather, the vicinity, with trampled grass and scattered feathers, being suggestive of a goose green” (Salter).

“In Hoy [in the Orkneys] any one,” writes Mr. Moodie-Heddle to Harvie-Brown, “can create a breeding place of the Lesser Black-backed Gull by burning a large tract late in the season; the Gulls then come on the bare ground (through the following summer and autumn) to catch moths and winged insects, which have no heather left to go down into. They then usually begin to breed on the tufts of white moss left unburnt the following season. The breeding places by the water of Hoy and down to Pegal Burn, were thus formed by accidental fires. No Gulls bred there for many years before, and we could kill sixty or seventy brace more Grouse.” In Iona, Mr. Graham notes that this Gull made its nest on the flat marshy summits of all the lesser islands. The nest is sometimes on the bare rock; but more often on a grassy slope if such exist near. The most remarkable situation for a nest, perhaps, is that cited by Dr. Sharpe, which was placed in the middle of a sheep track, and the sheep, in passing to and fro, had to jump over the back of the sitting bird! This nest (with its four eggs) is now in the British Museum.

This species breeds in colonies, which in some places are very large, when their nests are placed so close to each other, that it is by no means easy to traverse their nursery without treading upon either the eggs or young. The nest, if on the ground, is little more than a scraped out hollow in the ground, lined with grass, sea-weed, or herbage of any kind within reach; if on a rock a larger pile of the same substances, is built up in the selected niche or ledge. It is not at all uncommon to find the Herring Gull nesting in close proximity to it, only, however, in the more inaccessible ledges or summits. Three eggs are laid as a rule—four occasionally, sometimes only two—which vary very greatly in size, shape and colour. Many of them are hardly, if ever certainly, to be distinguished from those of the Herring Gull. They vary in size from $2\frac{2}{3}$ to 3 inches in length, by $1\frac{2}{3}$ to 2 in diameter. Ground colour from very pale grey, through olive-brown to greenish-blue or chocolate-brown, spotted and blotched, often more abundantly at the greater end, with black or dark brown. From the end of May, through June and into July, eggs and chicks of all stages and ages may be found.

After about three weeks incubation the chicks break through their prison, as lively and nimble balls of down, greyish-buff above, with the head, neck and back spotted with brown; the under side paler and unspotted. On the least intrusion on their cubicle they are ready to be off—running, as Mr. Battye remarks, head down and shoulders up like a Falcon—to the nearest herbage or water for security; but if left undisturbed they may be found for a fortnight or more in the nest, most assiduously tended by the parents. The approach of any intruder when the helpless young are in the nests, is the signal to set the whole of the

colony on wing, wheeling round his head, swooping down upon and screaming at him.

When fledged, the bill, legs and feet are livid corneous; the feathers, which are white in the adult, have a centre streak, or a bar of ashy-brown, and pale edges; and where black they are reddish-brown, with yellowish-white edges; the wing feathers are sooty or black, and the tail is mottled with brown which, near the end, becomes almost a continuous bar, the tips of the feathers being greyish-white; the bill is horn colour, and the legs and feet brownish-white.

During its first autumn the bird undergoes no true moult, but the brown becomes less marked in some parts, by loss of pigment, and more uniform, through the wearing off of the pale tips.

In the next spring there is a more general, but slow, moult, in which the brown comes in of a less deep shade, and during the second autumn its colour becomes a little paler still.

During the next year, in spring and autumn by feather-changes, and loss of pigment in them, the brown is still further lost; bill yellow at its base, but without the red spot on the angle of the mandible.

In the fourth autumn this Gull has assumed almost the complete winter dress of the adult—the white spot near the end of the primaries perhaps alone not being well marked.

The following spring—when the bird is in its fifth year—sees it in its first nuptial plumage, which we have described above. As soon as that interesting period is over, the Gull begins to assume its first mature winter garb, which differs only from that of the summer in showing brown streaks on the head and neck.

“The flight of this bird is peculiarly elegant”—if we may quote again from Macgillivray—“resembling that of the Greater Black-backed Gull, but more easy and buoyant, with the wings considerably curved. Its ordinary cry is loud, mellow and somewhat plaintive, and when a number join in emitting it, which they sometimes do when assembled for repose on an unfrequented beach or island, may be heard at a great distance, and is then far from unpleasant. It also emits occasionally a cackling or laughing cry, more mellow than that of the species above named. It searches for food on the open sea, in estuaries, on the beaches and frequently on the land, sometimes flying to a great distance from the coast. Small fishes, crustacea, echini, shell-fish [especially *Tellina tenuis*], land-mollusca and earth-worms [moths and other insects] are its habitual food; but it also eats of stranded fishes, and devours young birds. When shoals of young herrings are in the bays, creeks, or estuaries, it may often be seen in great numbers, intermingled with other Gulls; but when reposing, whether on the sea or on the land,

it generally keeps separate in small flocks Although I have robbed many Gulls nests, I have never been attacked, or even menaced by any of the larger species; other individuals, however, have experienced a different treatment." Mr. Hewitson, on the other hand, relates of the present species:—"After they have begun to sit, they become very bold in the defence of their eggs; whilst among them, I was amused with one near the nest of which I was sitting; it retired to a certain distance to give it full force in its attack, and then made a stoop at my head, coming within two or three yards of me; this it continued to do incessantly till I left it." In the spring it may often be seen following the plough, picking up worms and grubs, like, and in company with, the Herring Gull; and when the farmer has sown his fields, this species may very frequently be seen helping itself to the grain.

Mr. Thompson notes that this Gull is very fond of ascending rivers, as well as visiting inland lakes. Several of these birds may be seen, in winter and spring, in the river Lagan as far as the first fall above the sea, where the canal commences—the snowy whiteness and pure black of their plumage contrasting finely with the back-ground of dark foliage of the river banks. "On one occasion," continues the same naturalist, "I observed an adult bird fishing high up the Lagan while soon afterwards two immature birds flew up the course of the river till they joined him. They were no doubt the bearers of some particular intelligence, as immediately on their reaching the old bird, he wheeled about and the three proceeded with their utmost speed down the river. In like manner I once observed several of the Black-headed Gulls feeding in a ploughed field, half a mile from the shore of the bay, whence a single bird flew direct to them; the moment it arrived they all wheeled about, and, with their best speed, made for the bay, where it was low water at the time; they were not in any way alarmed in the field; the courier seemed to convey some special news."

The Lesser Black-backed Gull may be distinguished from the next species—the Greater Black-backed Gull—by its yellow feet and larger size, and the wings being proportionately longer; "the principal characteristics of *L. fuscus* are the comparatively long tarsus and the small delicate foot" (Saunders).

*Family—LARIDÆ.**Subfamily—LARINÆ.*

GREAT BLACK-BACKED GULL.

Larus marinus, LINN.

THE Great Black-backed Gull is among the largest of the *Laridæ*, and of our marine birds it is far and away the grandest. It is found as a breeding bird across Northern Europe, from within the Arctic Circle and Iceland as far as the 55th meridian, and down as low as the 50th parallel of N. latitude. In winter it migrates from its northernmost homes southward to the Canaries; but remaining resident throughout the year in those less inclemently situated. In the western hemisphere it breeds in Greenland, Labrador, and the Atlantic coast of North America, and also on some of the Great Lakes. In winter it migrates thence from its more arctic nesting haunts southward to Florida.

It is resident on most of the coasts of the British Isles during the autumn and winter, and it breeds in large or small colonies in a few rather widely separated localities in England; more numerous in Scotland, and in perhaps half a score of sites in Ireland.

In England, it nests on Lundy Island; on the Scilly Isles; on the shores of Dorset and Cornwall, and on the Welsh and Cumberland coasts, as well as in Furness. No breeding place on the east coast is known.

In Scotland, the islands of the Inner and Outer Hebrides, and the Orkney and Shetland archipelagoes afford endless sites for its colonies free from disturbance and exactly to its liking; the rocky islets of Loch Skeanaskaig and the boggy moors adjoining (Booth); and on Duncansby Head in Caithness. On the east coast, almost nowhere is it known to nest.

In Ireland, Arranmore off the coast of Galway; the Magharie Islands off the shores of Kerry; Belfast Lough and the Bills of Achill, are among the better known breeding haunts of this species.

The Great Black-backed Gull is a larger edition of the Lesser Black-back; and as in that species, the female is smaller than the male, and has a less powerful beak. In plumage the two sexes are exactly alike at the same age and in the corresponding seasons. In its full summer dress it is really a splendid bird. The whole of the body pure white, with the exception of the back and wings, which,



GREAT BLACK-BACKED GULL ♂

—but for the white tips of many of the quills, of the scapulars and of the secondaries, where they form a prominent alar bar—are black (varying to slate-blue) in striking contrast to the rest of its plumage; “the uttermost primary white for nearly three inches, its upper part blackish; the second similar with a black spot or a narrow subterminal bar according to age on the inner web; third quill with an indication of white on the shaft blackish above, next the shaft, with a fairly visible greyish wedge ending in white on the inner web; fourth and fifth quills with more defined grey wedges on the inner webs, and a black sub-apical bar; remaining quills slate-grey, except the tips”; a circle round the eye scarlet; iris pale yellow; bill yellow, its angle yellowish-red; legs and feet bluish-white; length of the male 29 inches; wing 20; tarsus 3; middle toe and claw 3.

The Great Black-backed Gull mates early in April and, by the beginning of May, the couple have fixed on a site and arranged their home. This may be placed near the shore; sometimes among bare stones; on a high steep hill side; on open moors; on an island in a fresh water loch; or on the top of a “stack” or inaccessible cliff; but rarely on the ledge of a precipice. It is gregarious, but less so than many other species. Harvie-Brown and Buckley describe, in their “Inner Hebrides,” “one colony known to us [where] there are about fifty pairs . . . and on another island perhaps even a more extensive colony mixing with, or keeping slightly apart from, the Herring and Lesser Black-backed species.” The nest is not, as a rule, a very elaborate structure; and it differs in the materials of which it is built with the site. If near the sea, it may be of loose grass, seaweed, or any vegetable material the locality provides; if inland, of grasses or plants and a few feathers. Herein are deposited two or three eggs, the latter being the more usual number. They are far more regular in colour than those of the last described species. They are covered with small irregular spots, sometimes blotches, but occasionally scrolls upon a greyish-brown ground. In size they run to about $3\frac{1}{2}$ inches in length by $2\frac{1}{4}$ in diameter.

In the beginning of June young chicks may be found in the nurseries as charming little balls of down, of a pale brown greyish-white, or sandy colour, spotted with black on the head, neck and back, elsewhere speckled with grey; underneath greyish white and with few, or no spots; bill brownish-black at the base, pale horn anteriorly, light at the tip; legs and feet livid flesh colour. They are able to run the moment they are hatched almost, and they will take to the water when a few days old. Mr. Pearson saw a nestling swim down a rough river to an island a mile lower. They take from five to six years to attain their fully adult plumage. When fledged the head and neck are greyish-white, streaked with greyish-brown; the upper side streaked or mottled with blackish-brown and greyish-brown; tail

feathers mottled and barred with blackish-brown, but without a well defined band as in most of the Gulls.

This species goes through almost the same changes in its progress towards maturity, as those already described under the Lesser Black-backed Gull.

In their fifth or sixth year they assume their nuptial dress for the first time; and at the close of the breeding season they change into their true, and what will be their annual, winter garb, which only differs from their summer plumage in showing greyish-brown streaks on the crown and nape. These will be the only two changes that this Gull will annually exhibit for the rest of its life.

“The Great Black-backed Gull,” writes Macgillivray, and his description is so full and interesting that we make no excuse for quoting the following lengthy extract, “is among the most beautiful of a tribe remarkable for beauty. The contrast between the dark purple tint of his back and wings and the snowy white of the rest of his plumage . . . renders him an object at all times agreeable to the sight. No sprinkling of dust, no spot of mud, ever soils his downy clothing; his bill exhibits no tinge derived from the subject of his last meal, bloody or half putrid though it be; and his feet, laved by the clear brine, are ever beautifully pure”

“When watching for Eagles in a covered pit, I have seen it come to the carrion, alight at a little distance, look around, walk up to it with short steps, and commence tugging at the entrails or tearing morsels from the flesh. In this it is sometimes joined by the Herring Gull. Should a Raven arrive, the Gulls continue their repast, the parties not interfering with each other if the object be large; but to the eagle, whether the Golden or the White-tailed, they feel obliged to yield, retiring to a short distance, and walking impatiently about, until the unwelcome intruder departs Vigilant and suspicious, it is not easily approached at any season, it being of all our Gulls that which forms the most correct estimate of the destructive powers and propensities of man. Chief of its tribe, and tyrant of the seas, it evinces a haughty superiority which none of our aquatic species seem inclined to dispute. Little disposed to associate with its inferiors, it passes its leisure hours, or periods of repose on unfrequented parts of the sands, or on shores, or islets, often on the bosom of the sea just behind the breakers, where it floats lightly on the waves, presenting a beautiful appearance as it rises and falls on the ever-varying surface. In winter it is scarcely gregarious, more than a few individuals being seldom seen together; but when there are shoals of fish in the bays or creeks, it mingles with the other Gulls, from which it is always easily distinguished by its superior size and very loud and clear cry, which may be heard in calm weather at the distance of a

mile. Frequently when flying it emits also a loud rather hoarse cackle, having affinity in sound, although not analogous in nature, to a human laugh. All the larger Gulls are in one sense laughter-loving birds; but if we take note of the occasions when their cachinnations are edited, we discover that so far from being the expressions of unusual mirth, they are employed to express anxiety, alarm, anger and revenge. Its flight is strong, ordinarily sedate, less wavering and buoyant than that of smaller species, but graceful, effective, and even majestic. There, running a few steps and flapping its long wings, it springs into the air, wheels to either side, ascends, and on outspread and beautifully-curved pinions, hies away to some distant place. In advancing against a strong breeze, it sometimes proceeds straight forward, then shoots away in an oblique direction, now descends in a long curve so as almost to touch the water, then mounts on high. When it wheels about, and sweeps down the wind, its progress is extremely rapid. It walks with ease, using short steps, runs with considerable speed, and like the other Gulls, pats the sands or mud on the edge of the water with its feet. It generally rests standing on one foot, with its head drawn in; but in a dry place it often reposes by laying itself down. Its food consists of small fishes cast on the shore, of crustacea, shell-fish, echini, and marine worms. In winter it frequents the hills and moors in search of carrion, and in summer and autumn often preys upon the young of various sea-birds. I have seen it eating the flesh of a stranded whale along with the Raven, and carrion on the hills along with that bird and the Eagle. Sometimes, but not often, it searches the ploughed fields for worms."

In Iceland this Gull has, according to Mr. Pearson, the reputation of being more destructive to young lambs than even the Ravens.

"In the Highlands," writes Mr. Booth, "the Great Black-backed Gull causes considerable loss to many of the small sheep farmers and crofters, who are unable to give the necessary care and protection to the few animals they possess. A weakly ewe is no sooner discovered than she is set upon, and after being either forced into some crevice among the rocks, or slowly butchered by thrusts from their powerful bills, the lamb next falls an easy victim. . . . [Of such facts] during the last few years several instances have come under my observation . . . The young of Grouse and many other birds breeding on the moors are also greedily devoured by these robbers, and no exposed egg is safe if once it has attracted their notice. . . . Those that breed along the sea-cliffs seldom make foraging excursions inland, their prey being gathered for the most part along the shore or out at sea; in some instances the nests of their neighbours are also plundered. Though their plumage is pure and spotless as the driven snow, these voracious birds are decidedly

omnivorous; carrion, however foul, putrid fish, or any floating refuse, comes by no means amiss, when more tempting prey is scarce.

“Any one who has spent much time punt-gunning on the Highland Firths along the north-east coast during the first quarter of the year . . . must have been much annoyed by the presence of these Black-backs. No sooner does the gunner make preparations for approaching an unsuspecting bunch of fowl, than three or four screaming Gulls gather over the flock and after flying round for a time their excitement increases as the punt draws near, till at last darting down open-mouthed they drive every bird from the water and put an end to all chance of a shot In my notes for 1869, while shooting in the Dornoch Firth, I find that on March 15, at least half-a-dozen fair shots at bunches of Pintails, all fine drakes, were lost by the Gulls constantly keeping in attendance.”

Mr. Harting notes, of a specimen he kept in captivity for some years, that the tame bird fully exemplified its omnivorous habits. “Nothing seems to come amiss to him—meat, both raw and cooked, fish, mice, small birds, snails, worms, flies, are all consumed in turns as opportunity offers. If a live mouse is turned down on the lawn before him, he at once gives chase, and coursing rapidly in pursuit of it, like a Wagtail after a fly, seizes it with unerring aim behind the head, and after a sharp pinch or two, which crushes the skull and larger bones, the unfortunate mouse is swallowed whole. Sparrows and other small birds are treated in the same way, being invariably first crushed and then swallowed, head first whole. In this way I have seen him take five sparrows in rapid succession.”



GLAUCOUS GULL ♂♂

Family—*LARIDÆ*.

Subfamily—*LARINÆ*.

GLAUCOUS GULL.

Larus glaucus, FABER.

THE Glaucous Gull, or as it is sometimes called the Burgomaster, is not a British breeding bird, but there are few years that do not see a considerable number of them on our shores as autumn and winter visitors, when the bird is on retreat from its true home, which at that season it often finds rather too frigid for its taste. It is more common in Scotland than in England, while in Ireland it is “occasionally obtained on the coast” (Thompson); but as that Naturalist has remarked it may be not so rare in England or in Ireland as supposed, because it is not improbably often mistaken for an immature Great Black-backed Gull.

In England it has occurred at most points of the southern coast, but it has been oftener noted on the East coast, than on the West. The same remark applies to Scotland; for its occurrences are fewer on the Atlantic side. Considerable flocks visit the outer Hebrides; according to Mr. Robert Gray these rarely go inland, but remain on the shores of islands where large areas of sand and mud are exposed at low tide, leaving quantities of garbage for them to feed upon. In the Shetland Isles it is seen in larger numbers than perhaps any other part of Scotland, and flocks—almost exclusively of young birds—may be seen very late in the year. The estuaries of the Forth of Tay are also specially frequented by this species.

In Ireland it has been recorded from Youghal, from Strangford Lough; from Movile, near Londonderry; from Dublin Bay and the vicinity of Waterford.

The true home—or breeding range—of this species is that vast tract of the globe lying round the north pole down to about the 70th parallel of latitude. During the winter it migrates southward, in the eastern hemisphere, in large numbers as far as 50° N., and in more attenuated flocks as far as the Mediterranean, the Caspian and Black Seas; and to Japan on the western side. In the western hemisphere, on the Atlantic coast almost to the Tropic of Cancer, and on the western sea board to California.

The Glaucous Gull is one of the largest and most powerful of the *Laridæ*, quite equalling, sometimes also exceeding, the Great Black-backed Gull in size.

In the spring and early summer this species is on the move northward to its breeding haunts, and beginning to assume its nuptial dress, which is identical in both sexes, which in size, however, exhibit great variation; yet the females in a colony are, as a rule, smaller than the males. In breeding plumage the body is pure white everywhere except the back, wing-coverts and wings, which are pale pearl-blue; the primaries are pale pearl-blue at their bases and on the external web, with a long white termination; the tips of the scapulars and secondaries white; the large and strong bill gamboge yellow, with a bright vermilion spot on the angle of the lower mandible; ring round the eyes yellow; legs and feet pale flesh colour. Length of male 30 inches; wing $18\frac{1}{2}$; tail $7\frac{1}{2}$; tarsus 3; middle toe with its claw, $2\frac{3}{4}$. There is, however, much individual variation. Sabine records a specimen 32 inches with a tarsus $3\frac{1}{2}$.

According to Professor Newton, Dr. Malmgren found this Gull choosing the "highest part of the cliffs for nidification. He further found it breeding high up on the mountain sides, apart from any other species. In Loom Bay, he also tells us, he has seen it swoop down like a Falcon on a young Dovekie [*Uria gryllic*] seize it in its beak, and eat it on a projecting part of the nearest rocky cliff on shore, where many skeletons are witness to its former rapacity. I have before mentioned that I saw a Burgomaster attack a young Brännich's Gullemot."

The nest is, as a rule, a heap of seaweed or vegetable debris piled on a rock; if situated on the ground it is formed by a hole scraped in the ground and lined with grass or seaweed; on the barren tundras it is composed of sand heaps hollowed on the top.

According to Professor Newton, it frequently breeds in Greenland by itself; but as a rule in company with Kittiwakes and Iceland Gulls.

With regard to the nesting of this species, Mr. Trevor Battye in his interesting "Ice-bound on Kolguev" observes that "the nests of the Glaucous Gulls which we visited were situated on the highest ridge of the outer sand banks to the south of Scharok Harbour. They were visible from a very long distance, and proved to be lumps formed of sand mixed with sea-weeds and great quantities of hydrozoa (*Sertularia* and others) on which flourished *Arenaria peploides*. The sand had in many cases originally collected round drifted timber, and the birds had taken advantage of this to raise upon it a pile some two feet and more in height. As the Samoyeds rob these nests constantly, one wonders that any young get off. Hyland was so violently mobbed by these birds, which stooped right down at his head, that he shot two 'in self defence.'"

Three eggs are the usual complement; they are oval in shape and about 3 inches long by $2\frac{1}{2}$ in diameter. Their colour is pale yellowish-grey dotted with

small dark brown spots, and black blotches, those underneath the surface purplish-grey. Often there are very few spots or markings. Mr. Seebohm attributed the beautiful reddish-buff eggs which are often obtained in certain gulleries to the present species; but the investigations of Mr. Pearson in 1896 seem to have definitely settled the question that they are laid by the Herring Gull (*L. argentatus*) "at any rate," he says, "I was told last year that *Larus glaucus* had ceased to breed at Vardö for some time, yet red eggs are still obtained there. The reader is referred to Mr. Pearson's observations on this subject quoted on page 82, in our description of the Herring Gull.

According to Neumann this species incubates for four weeks, and the chicks, that then emerge, are clothed in dust-grey down, the head and back mottled with brown.

The young bird appears, on becoming fully fledged, in a rich cream-coloured plumage, streaked above and below with greyish-brown, the head and neck with streaks of the same colour; upper surface transversely barred with pale brown, the feathers tipped with yellow; "outer quills clay-brown on their outer webs and paler on the inner webs; upper and under tail-coverts rather boldly marked with brown" (Saunders); tail-bars broken up into irregular spots; bill yellow with a black tip; legs and feet brownish.

It is not known how many seasons—probably three autumns at least—this species has to pass before it dons the plumage of the adult. "In the spring preceding the final autumnal moult into adult winter dress, a mottled plumage is acquired of so pale a character that it fades during the summer into a creamy-white" (Seebohm). "At the subsequent moult the pearl-grey [some of which may appear in the second autumn] [of the] mantle is assumed, but the new tail feathers show some faint brownish mottlings until the next year" (Saunders).

The fully adult winter garb differs from that of the summer only in having the head and neck streaked with brown.

The Glaucous Gull resembles in plumage, and is liable to be mistaken for, the Iceland Gull; but it is much larger, and has shorter wings; its flight also is heavier; and it has white tipped primaries, with no black on the outer ones at any age.

This fine Gull is "notoriously greedy and voracious, preying not only on fish and small birds, but on carrion of every kind. One specimen killed on Captain Ross' expedition disgorged an Auk, when it was struck, and proved on dissection to have another in its stomach. Unless when impelled to exertion by hunger it is rather a shy inactive bird, and has little of the clamorousness of others of the genus" (Richardson). Mr. Trevor Battye notes that "the

Glaucous Gulls, who were our very intimate friends, used to carry bivalves from the creek away on to the swamp behind the tent, till they had quite a collection there."

To the sportsman they are almost as great a nuisance and as irritating as the great Black-backed Gulls. "They carried off," so Mr. Booth narrates his experience, "several Plovers that had been knocked down and run beyond the range of the shoulder gun; and also repeatedly put up the ducks, while we were sculling to them, floating quietly on the firth utterly unconscious of danger."

"Dr. Edmondston . . . first introduced it to notice as a British Bird," writes Professor Macgillivray, "having obtained in Shetland a specimen of the young in the autumn of 1809 and another in 1814 which he presented to Mr. Bullock" Its favourite resorts are the estuaries of the more exposed bays, a few miles off the land, where it is often found assiduously attending the fishing boats, to pick up any offals that may be thrown overboard; and it is often taken by a line and hook baited with fish, when engaged in their pursuit. It is greedy and voracious to a proverb; and when allured by carrion, which seems to be its favourite food, becomes comparatively indifferent to danger. It then quits the ocean and headlands, enters the bays, and boldly ventures inland. Its usual deportment is grave and silent, exhibiting little of the characteristic vivacity or inquisitiveness of its tribe. . . . When it flies it extends its wings more than the other species of Gull, and its flight is also more buoyant; . . . and when not in quest of food, seldom comes within range of a fowling piece, but soars at a respectful distance, uttering at intervals, a hoarse scream, of a sound peculiar to itself. . . . It is more perfectly an oceanic bird than perhaps any of the larger species of the genus; . . . I have always observed this species to be uncommonly fat when it first arrives in Zetland in autumn. Indeed, I hardly remember ever seeing any bird equal to it in this respect, a circumstance which, together with that of the singular compactness of its plumage, and voracious avidity for carrion, first induced me to suspect this marine vulture to be a native of the higher latitudes."

"It usually breeds where there is a large colony of other sea-birds, and to a large extent, it both feeds its young and itself on the eggs and young in down of its weaker neighbours, and renders itself a perfect pest to them. The young of the Eider, and of several other of the Sea-Ducks, are looked on by it as tender morsels; and in places to the extreme north, where these birds breed in large numbers, the Glaucous Gull is almost sure to be present, and devours large numbers of the young birds, pouncing down on and catching them just as it requires them." (Dresser).



ICELAND GULL ♂

IMMATURE

*Family—LARIDÆ.**Subfamily—LARINÆ.*

ICELAND GULL.

Larus leucopterus, FABER.

THE Iceland Gull, like the preceding species, which it so closely resembles in appearance, is only a winter and autumn visitor to our shores, driven by stress of weather. It has, however, been taken on all parts of the coasts of both England and Scotland from the Shetlands to Land's-end. It is, as might be expected, more common in Scotland than in England. In Ireland it is "only known as a bird of extremely rare occurrence on the coast." In 1892, however, large numbers visited Ireland and spread along the coasts from Donegal to Sligo, Mayo and Galway, and were fond of feeding after the plough. As in the case of the Glaucous Gull, it may not improbably more often be on our coast than is suspected; it may be mistaken for miniature Great Black-backed Gulls, and perhaps Glaucous Gulls are sometimes taken for Iceland Gulls.

Like the last species, the Iceland Gull is also an Arctic inhabitant, having its home within the Arctic circle, breeding in Greenland, Jan Mayen Island, Alaska, "and perhaps the American side of Baffin Bay" (Saunders). It is not known east of the 30th meridian, but a young specimen was obtained by Captain Blakiston in Japan. In winter it straggles southward as far as the latitude of the middle of France.

The real discoverer of this species as a British Bird was the same enthusiastic naturalist as added the Glaucous Gull to our list—Dr. Edmondston, of Shetland.

Except that the ring round the eyes is not vermilion, as it is in *L. glaucus*, but flesh colour, the Iceland Gull as far as colouration goes is in every respect similar to the Glaucous Gull, and by this character cannot be separated from it; the legs and feet are livid flesh colour. In dimensions, however, the Iceland Gull is invariably a smaller bird than its counterpart, and it has a proportionately longer wing, indeed "the largest male *L. leucopterus* does not attain to the length of wing found in the smallest female *L. glaucus*" (Saunders).

The female of the Iceland Gull is smaller than the male. The length of *L. leucopterus* is 23 inches; wing 16; tarsus $2\frac{1}{2}$, and middle toe with its claw, $2\frac{1}{2}$.

Mr. Harvie-Brown who has studied both birds in their native haunts, says,

that "apart from the inferior size of *L. leucopterus*, which in itself alone cannot be accepted as a criterion for distinction, this species can be separated by the field naturalist from the Glaucous Gull by its neater, more slender appearance, standing higher on its legs, having a more curvate shape posteriorly, and the wings more tapering when closed. Further it appeared to me that the Glaucous Gulls, when resting on the mud, and with the wings closed, carried the tips of the wings higher than the end of the tail, but that the Iceland Gulls carried their wings on the same, or nearly the same level as the tail; thus imparting to these birds a more tidy trim appearance than their big brothers possessed. When flying the action of the Iceland Gull is more airy and buoyant—less owl-like—than that of the Glaucous Gull. The adults when flying low, or against a dark cloud, show the white primaries, like a narrow strip of silver along the wing."

The Iceland Gull mates and begins the work of nidification in the month of May, and early in June eggs may be found. The sites most affected by it are ledges of precipices, or on the bare ground, or on the summit of high rocks.

The nest, if on the ground or on the sand, is a mere depression in which from two or three eggs are deposited, very similar in colour and markings to those of the Glaucous Gull, but in size smaller. They are of a pale greyish-buff, to yellowish-brown or pale olive ground colour, spotted and blotched over with chocolate-brown, or purplish-brown as seen through a surface layer of shell. In size these eggs average about a little under 3 inches in length by a little over 2 inches in diameter.

The young in all their stages agree, so far as known, with the young of the Glaucous Gull, except that they are proportionately smaller.

The young, which as a rule arrive on our coasts in the end of autumn, are greyish-yellow, with brownish-grey streaks on the head and neck; and transverse markings of the same on the back and tail; the outermost primaries white, and the remainder greyish-white beneath, mottled with brownish-grey on a yellow ground; bill flesh colour at the base; dark brown externally; legs and feet livid flesh colour.

In winter the Iceland Gull has the same dress as in summer save that the head and neck show greyish-brown streaks.

This species, though named the Iceland Gull, does not breed in that island; it may remain all winter there; but on the return of spring, it hies northward to its nesting haunts within the Arctic circle. According to Faber it is the only Gull "that passes the winter in Iceland without breeding in summer . . . a few days after the middle of September, the first specimens," continues the same author, "both old and young make their appearance on the coast of Iceland, confining

themselves to the northern parts, among the small inlets of which great numbers pass the winter. When I lived on the innermost of the small fjords on the northern coast, these birds were our daily guests. Towards the end of April their numbers decreased, and by the end of May they had nearly all disappeared from Iceland. These tame birds came on land by my winter dwelling on the northern coast, to snap up the entrails thrown away by the inhabitants, and fought fiercely for them with the Raven. I had made one so tame that it came every morning at a certain time to my door to obtain food, and then flew away again. It gave me notice of its arrival by its cry. This Gull indicated to the seal-shooters in the fjord where they should look for the seals, by continually following their track in the sea, and hovering in flocks, and with incessant cries over them; and whilst the seals hunted the sprat and the capeling towards the surface of the water, these Gulls precipitated themselves down upon the fish and snapped them up. In like manner they follow the track of the cod-fish in the sea, to feed upon the booty hunted up by this fish of prey." Throughout the winter of 1820-21 he tells how there were no Gulls, till suddenly on the 2nd of March the Iceland Gull arrived in great numbers. "The Icelanders concluded, from the sudden appearance of these Gulls, that shoals of cod-fish must have arrived on the coast. They got ready their boats and nets, and the fish had in truth arrived in such numbers that the fishing for that season commenced immediately. Here where hitherto an ornithological quiet had reigned, everything now became enlivened through the arrival of these birds, which, without intermission, and with incessant cries, hovered over the nets . . . this Gull was my weather guide in winter. If it swam near the shore, and there, as if anxious, moved along with the feathers puffed out, then I knew that on the following day storms and snow were to be expected. In fine weather it soared high in the air. Hundreds often sit on a piece of ice and in that way are drifted many miles."

Dr. Saxby observes that this Gull may readily be recognized at any distance "by its acutely pointed and somewhat long white wings and by a peculiar roundness of body. The note, also, has a character of its own, somewhat resembling that of the common goose. The bird seems to be partial to vegetable food, often resorting to the fields, where it may not seldom be seen near the pigs, which in Shetland are tethered by long ropes fastened to a stone or stake in the ground. Possibly the earth worms rooted up may be an attraction. In the stomach I have found a considerable quantity of oats and vegetable fibre with numerous small pieces of quartz."

Family—*LARIDÆ*.

Subfamily—*LARINÆ*.

KITTIWAKE GULL.

Rissa tridactyla, LINN.

THE Kittiwakes have been separated from the true Gulls—*i.e.*, those of the genus *Larus*, to which all the species we have been describing have belonged—into a genus by themselves (containing two species, a red legged and a dark legged form). *Rissa*, is distinguished by the short tarsus; but chiefly by the rudimentary condition of the hind toe; the arched bill; the slightly forked tail; and by the young having a plumage quite unlike that of the adult or of other species of *Larinæ*. The name ‘tridactyla’, or three toed, is not strictly correct, as the first toe, though very small, is present.

The Kittiwake—so named from its cry—is during summer one of the most common gulls in the British Isles, where there are suitable places for it. These suitable places are localities where there are “several precipices,” for it will build almost nowhere else. Where tall “stacks” and a bold precipitous coast occur, there pretty certainly will a colony of Kittiwakes be found, and as a rule in enormous numbers. It is vain to look for its nest on low sandy shores. It is more abundant, however, in Scotland and in Ireland than in England, because in the former countries the skerries and outlying rocks are more numerous. Lundy Island, Flamborough Head, and the Farne Islands are well recognized English colonies. The Hebrides, the Orkney and Shetland Isles, the “Rowans,” near Wick, the Bass Rock, the Bullers of Buchan, and St. Abb’s Head harbour hundreds of thousands of these birds. In Ireland, the cliffs near Horn Head, the skerries off Portrush, Bills rock off Achill Island, the Great Isle of Arran, in Galway Bay, and Bull Island off the coast of Cork, are well known haunts of this pretty species.

The range of this Gull in summer is very wide. It has been found breeding as far north as man has penetrated, previous to Nansen, who does not, however, record it at his “Farthest” north, all round the shores of the Polar seas of the eastern hemisphere, and as low as the north west of France. In the western hemisphere it extends across the whole of North America except at one or two points, whence it has not yet been recorded, but where no doubt it will yet be



KITTIWAKE GULL ♀
IMMATURE

found, and ranges southward as far as the Gulf of St. Lawrence on the eastern side, and the Kurile islands on the Pacific sea-board.

In winter it migrates southward, but many flocks remain in the more temperate parts of its range throughout that season. It reaches as far as the Mediterranean and along the west coast of Africa, and in the American continent to the south of Carolina on the one side, and of San Francisco on the other.

In size and plumage both sexes are alike. In the end of March the adults, when they are on their northern journey and making for their skerry nurseries, are coming into their full nuptial dress. At this season the head, the entire neck down to the upper back, the rump, the upper-tail coverts, the tail and the entire under side are pure white; the mantle dark lavender grey; the scapulars and secondaries tipped with white; in the wing—which is pointed and extends for an inch and a half beyond the tail—the primary shafts are ashy; “quills chiefly grey, but the outer web black in the first, grey in the others; terminal portions of first to third primaries black; fourth quill with extreme tip white, surmounted by a black bar, and the fifth similar, with a narrower bar; in the sixth there is, sometimes, a subterminal black bar varying in breadth and at other times a mere black speck the size of a pin’s head on the outer web, while in mature birds the entire feather is spotless grey, with whitish inner margins, as are the succeeding primaries and the upper parts of all” (Saunders); bill pale greenish yellow; legs blackish brown, toes darker; ring round the eye rich yellow. Length 17 inches; wing $12\frac{1}{4}$; tail 5; tarsus $1\frac{1}{4}$; middle toe with its claw, 2.

The Kittiwakes begin in the middle of April and on to the end of the month, and into May, to construct their rather large nests of mud, sea-weed, fresh-water algæ or grass, placing them on the ledge (often a quite narrow one) of the precipitous rock the colony may have chosen—which they return to year after year. So narrow, as Macgillivray remarks, are the ledges they choose, that the nests seem “stuck against the face of the rock like those of Swallows.” They build also in caves in the cliffs, and occasionally on the grass—in all these situations often in association with Little Auks and Gullmots. Very often storms and rain-deluges wash away these nests off the rocks, with the result that their breeding season is greatly lengthened.

The Kittiwake lays two to three eggs of about, on an average, $2\frac{1}{4}$ inches in length by $1\frac{1}{2}$ inch in diameter, spotted pretty uniformly all over with dark brown and purplish-brown (the spots beneath the surface) on a ground which varies from white, through yellowish- or greenish-white and olive-green to purplish-brown. The surface of the shell is less polished than in most other Gulls’ eggs.

Buckley and Harvie-Brown say that "before beginning to make their nests the Kittiwakes do not frequent the rocks much, but sit in flocks on the water just below. When forming their nests one bird seems to remain at home to guard the materials collected, generally sea-weed of some sort, while the other forages for it. As soon as the bird arrives with the weed, it drops it on the ledge, and the other takes it up in its bill, places it where it wants it, and then stamps it down. After a short rest and a few little interchanges of an amiable nature, the first bird drops lightly off the ledge and flies off for more material. Every now and then a bird will commence its cry of '*Kitti-ake, Kitti-ake,*' which is taken up by the others near it until the noise is quite deafening. A stranger lighting near the nest of another bird is instantly driven off, and this occasions another outcry of '*Kitti-ake.*' A bird in immature plumage, but not of the year, was not allowed to land on the ledges, but was driven off immediately it tried to settle."

The Kittiwake incubates its eggs for about a month, at the end of which time, the little chicks emerge covered with long down, buffish-white everywhere except on the back and thighs which are dark-grey, margined with creamy yellow; bill bluish-black, legs and feet lead-blue. These little creatures are bound, on account of the site of the nest, to remain in or close to their birth-spot till they have become fledged. During their tender months they are assiduously fed by their parents. Mr. Harvie-Brown has recorded some notes sent him by Mr. Watt of Skaill, in the Orkneys, that when these Gulls are building their nests, they are in "constant flight from early morn until late at night, taking a track one way coming from the headlands, and another returning. They pick up a fresh-water weed, that is thrown up on our loch, for the purpose of making their nests soft and comfortable. When their young are out the same flight continues to and fro. I concluded that it was with food for their young, so shot one to see what it was. The crop was full, and on opening it, was astonished to find a mass of Daddy-long-legs, like, at first sight, a ball of worsted."

"The young Kittiwake is fed in a manner something similar to a pigeon. The old one arrives and sits on the edge of the nest, its neck largely distended with food, remaining there for some time as if ruminating. Presently she puts her head down and shakes herself, probably as soon as she feels the food is sufficiently macerated; she then opens her mouth and the young one puts its bill into hers, and takes out the food, and this is done until it is satisfied. The old bird never feeds the young until she has sat some time on the ledge, however importunate it may be, no doubt because she feels the food is not in a fit state for it to digest easily" (Harvie-Brown).

“The most interesting period of the Kittiwake’s life,” writes Seebohm, “is when it is engaged in the duties of rearing its young. A Kittiwake colony is one of the most charming sights a rock-bound coast can afford. Early in spring the birds return to their old nurseries, visiting them almost daily until the work of building or restoring the nests commences. The places this Gull prefers are steep cliffs—rocks which fall sheer down to the water—on the ledges and shelves of which it places its somewhat well made nest. If the cliffs are tenanted by other sea-birds the Kittiwakes usually select the lowest part of the rocks, often making their nests a few feet from the water; but in other situations where they have the rocks to themselves they utilise every suitable situation the largest colony of birds which I have ever seen is that at Svøerholt, not far from the North Cape in Norway, on the cliffs which form the promontory between the Porsanger and the Laxe Fjords. It is a stupendous range of cliffs, nearly a thousand feet high, and so crowded with nests that it might easily be supposed that all the Kittiwakes in the world had assembled there to breed. The number of birds has, however, been greatly exaggerated supposing the non-breeding birds to be ten to one, surely a very high estimate, we only reach five and a half million birds . . . it is the custom to fire off a canon opposite the colony; peal after peal echoes and re-echoes from the cliffs, every ledge appears to pour forth an endless stream of birds, and long before the last echo has died away it is overpowered by the cries of the birds, whilst the air in every direction exactly resembles a snow-storm, but a snow-storm in a whirl-wind. The birds fly in cohorts; those nearest the ship are all flying in one direction, beyond them other cohorts are flying in a different direction, and so on, until the extreme distance is a confused mass of snowflakes. It looks as if the fjord was a huge chaldron of air, in which the birds were floating, and as if the floating mass was stirred by an invisible rod.” In the words of Faber:—“They hide the sun when they fly, they cover the skerries when they sit, they drown the thunder of the surf when they cry, they colour the rocks white where they breed.”

When fledged the young have the front of the head, the throat, chest and entire under surface white; the hind head and the nape of the neck greyish-black, forming a demi-collar; a spot in front of the eye and a patch behind the ears of the same colour, the demi-collar, followed by a band of white, distinctly washed with lavender grey and by “a broad black band with irregular edges, across the secondaries, and for some distance on each side of the neck” (Saunders); back and wings deep lavender grey tipped with brownish black; the outer edge of the wing, and wing coverts mottled with black—forming a dark alar bar; the inner secondaries showing a long patch of black on the outer

webs, the primaries and quills black, "the seventh often plain but sometimes with a minute black spot on the outer web" (Saunders); tail white with a broad brownish-black terminal band, narrower on the outermost feathers; bill, legs and feet dark-brown. When in this plumage the young Kittiwakes are called Tarrocks.

There is a partial moult during the first autumn of the bird's life—the body feathers changing; but not the wing or tail quills—during which the dark feathers in the hind neck become paler. At the various subsequent autumn moults the back and wings gradually lose the blackish-brown and become dark lavender-grey; and the neck collar becomes less and less and finally fades out.

The adult birds after their incubating labours are over, change their summer attire for their first winter plumage, which differs from that they have just put off in showing spots of dark grey in front of and behind the eyes; "on the head and neck some slate colour, which is pale on the crown, deepens on the nape, where it almost forms a band, becomes blackish at the auriculars, and passes into white on the shoulders" (Saunders).

As soon as the young are able to fly the parents quit the nurseries, and move along the coasts, recruiting after their labours and undergoing their autumnal moult before proceeding to their southern retreats—that is such of them as are going to migrate. In many parts of our coasts Kittiwakes are to be seen during winter; it is of course difficult to determine whether these birds belong to the colonies that have bred in England, or whether they have come from further north and are making our more temperate regions their winter retreat. It is a true marine bird, and keeps very rigidly to the shore and coast, rarely straying inland; still it has been observed, by the Rev. H. A. Macpherson, in his "Lakeland," that in the spring of the year a few Kittiwakes often assemble in the fields, a few miles from salt water, to feed on the worms and grubs exposed by the plough.

The Kittiwake is a poor walker on account of the shortness of its legs; it rests "either standing or lying like the other birds of this group; associates occasionally with Gulls and Terns; is of a gentle disposition, sociable and altogether amiable It flies with a rapid and constant beat of its curved wings; glides and wheels and hovers over the smooth sea, or skims lightly over the high waves, descending into the furrows, and rising buoyantly to surmount the advancing wave" (Macgillivray).

The Kittiwake feeds on crustacea, shell-fish, any surface floating marine life, which, dropping down upon with elevated vibrating wings, they pick up most deftly. Dr. Malmgren, according to Professor Newton, found the stomachs of Kittiwakes, opened by him, filled with *Limacina arctica* and *Clio borealis*.

“While fishing and shooting in the channel off Shoreham, Lancing and Worthing, during autumn, I remarked that the young Kittiwakes generally put in an appearance soon after the beginning of September . . . I noticed they were capable of devouring immense quantities of herrings and any amount of sprats and fish-liver when cut up into small pieces; [which] we used to feed the swarms of these birds [with]. . . the Kittiwakes would hover in hundreds just over the stern, darting down when small pieces of fish were flung overboard, and seizing the morsel before it reached the water.” (Booth). Harvie-Brown and Buckley mention in their “Fauna of Argyll and the Inner Hebrides” a curious habit observed by Mr. H. Evans from his yacht. Kittiwakes were seen close by his vessel *under* water in pursuit of fish. “Two Kittiwakes,” he notes, “seen resting on the water, and things like open books under water, the next moment up popped six more Kittiwakes; we steamed into the middle of them, and there were eight instead of two. They were open winged under water, and rose apparently quite dry. They projected themselves into the water rather like Terns, but from a lesser height.”

This bird is, on account of its beautiful wings, one of the few British species destroyed in large numbers for the purpose of supplying “plumes” for ladies’ wear. Thousands are yearly shot for this purpose at Lundy, “in many cases the wings torn off the wounded birds before they were dead” (Saunders), just as is so often done in the breeding haunts of the White Egret; off Brighton, is another slaughtering place, with the same object in view. The confiding nature of the bird leads it to its destruction; for Kittiwakes like Terns congregate fearlessly and within shot, round one of their fallen neighbours.

*Family—LARIDÆ.**Subfamily—LARINÆ.*

IVORY GULL.

Pagophila eburnea, PHIPPS.

THIS beautiful Gull, a true native of the Arctic regions, is a frequent visitor to this country. As might be expected, it is most frequently to be seen in the more northern regions of our islands. It has, since its first notice in 1822, been recorded on more than thirty occasions, both adults and young, and from all parts, down both coasts of England and Scotland, to Sussex on the east and Cornwall on the west. In Ireland it has not been observed so frequently. The bird is rarely seen so far from its haunts as our shores, except in winter, and especially in severe seasons.

The Ivory Gull is at home all round the polar regions, and nests in a latitude higher than almost any other bird. Its eggs have been found in 80° N. latitude, and Nansen saw the birds in from 82° 21' north southward as far as Franz Josef Land, in large numbers. In winter, it migrates "as far as the coast of France and Lake Léman (once); and New Brunswick in America" (Saunders). In the North Pacific it is rare, though found on the Asiatic side of Bering Straits.

In summer plumage, the Ivory Gull, often called the Ivory Whale-Gull and the "Snow-bird," is entirely ivory white; the bill is greenish grey to the front of the nostrils, then tipped with rich yellow, flushed with red; a ring round the eye vermilion, or brick-red; legs and feet black. Length 19 inches; wing 14; tail 6; tarsus $1\frac{1}{2}$; middle toe and its claw $1\frac{2}{3}$.

The female is similar to the male, but slightly smaller and with, if anything, a smaller tarsus.

As to the nidification of this species Professor Collett has given an interesting account, in "The Ibis" for 1888, p. 440, from material and notes brought him by Captain Johannesen, from Stor-oën island, off the east of Cape Smith, Spitzbergen, in 80° 9' N. latitude. On the 8th of August when he [Captain Johannesen] visited the island, he found young birds in all stages, from newly hatched to fully fledged, together with a small number of eggs, which, however, were on the point of hatching, and in all probability not one would have been left a week



IVORY GULL ♂¹/₂

IMMATURE ♂

later *L. eburneus* was breeding on the N.E. side of the island, close to or only a short way above, high-water mark, on low-lying ground like *L. canus*, *L. fuscus*, &c., and not in the cliffs. Captain Johannesen estimated the number of nests at from 100 to 150; they were somewhat apart, at distances varying from two to four yards there were one or two eggs or young, but never more in a nest several black-spotted young, capable of flight were seen, likewise several young birds of the previous year's brood remained on the breeding ground.

"The nest is composed chiefly of green moss, which forms about nine-tenths of its mass; the rest consists of small splinters of soft wood, a few feathers, single stalks and leaves of algæ, with one or two particles of lichen under the microscope they [the splinters of soft wood] are proved to be of conifers, probably Larch, drifted from the Siberian rivers The average of nine eggs was 59.9 millim. in length by 33.7 millim. in breadth [$2\frac{2}{3}$ inches long by $1\frac{1}{3}$ in breadth]. The ground-colour of five specimens is almost entirely alike, viz., a light greyish-brown tint with faint admixture of yellowish green, such as often appears on the eggs of *L. canus*, which, however, have often a deeper brown or green hue. In structure and gloss all nine eggs greatly resemble those of *L. canus* The eggs are easily distinguished from those of *Rissa tridactyla* by their greater gloss, and the small excrescences do not lie so crowded, and are a little more flattened than they usually are in the last mentioned species.

"Newly hatched young in down . . . [are] white all over; the down white to the root. Even in this first stage, the young in down may be distinguished from the young of other species by the strong and hooked claws, especially on the hind toe, the somewhat margined web on the toes, and the forward nostrils In a somewhat older bird the tips of the feathers appear on the shoulders, which exhibit a broad dark-brown transverse band within the white and still down-bearing tips."

Fully fledged birds are more or less lavender-grey all over; birds still older but immature, have the throat and face grey, with black spots on the back and scapulars and on the secondaries. As they advance in age, the young Ivory Gulls have greyish black spots on the wing coverts; and a black spot at the tips of the primaries; while the tail has a black sub-terminal bar. The spots get fewer with the bird's age.

In winter the plumage is the same as in summer.

The Ivory Gull is a very fearless species as compared with other Gulls. Its note is spoken of by Captain Fielden as "shrill" and similar to the Arctic Tern's. Nansen calls it "an angry cry." "They are very bold," he says, "and last

night stole a piece of blubber lying close by the tent wall." Dr. Nansen elsewhere in his "Farthest North" tells how these birds behaved over the "remains" of a bear he had shot. "On the shore below the tent," he says, "the Ivory Gulls were making a fearful hubub. They had gathered in scores from all quarters and could not agree as to the fair division of the bear's entrails; they fought incessantly, filling the air with their angry cries. It is one of nature's unaccountable freaks to have made this bird so pretty while giving it such an ugly voice." This is quite in accordance with what has been recorded by Captain Fielden. "The Gulls gathered in large flocks from all quarters, both Ivory and Glaucous Gulls, and kept up a perpetual screaming and noise both night and day. When they had eaten as much as they could manage, they generally sat out on the ice-hummocks and chattered together. When we came down to skin, they withdrew only a very little way from the carcasses [of the walruses], and sat waiting patiently in long rows on the ice beside us, or, led on by a few bold officers, drew continually nearer. No sooner did a little scrap of blubber fall than two or three Ivory Gulls would pounce upon it, often at our very feet, and fight over it until the feathers flew."

The Ivory Gull feeds, in the Arctic regions, on crustacea and *Clio borealis*. "They never lie down," notes the Rev. A. E. Eaton, "like the Arctic Terns, but either walk or stand still; some of them walking far into the interior of the carcasses of the white whales, and emerging with their heads covered with blood."

Professor Malmgren writes that in Spitzbergen the Ivory Gull "is seldom seen elsewhere than near the ice. It does not settle on the water like other Gulls, but it is invariably seen on the edge of the ice; and it takes its prey with its beak from the water when on the wing. This species and the Fulmar appear in numbers when a seal or walrus is being cut up, and are so little shy that if one throws out pieces of fat they will approach quite close. At these places, where the seals, &c., are cut up, the Fulmars swim round, whereas the Ivory Gulls are on the wing, or sitting on the ice. Martens remarks also that he did not see them swimming on the water. This Gull feeds on carcasses left by the walrus-hunters or the remnants left over after the Polar bears have eaten; but its chief food consists of the excrements of the seal and walrus. I often observed on my excursions in places where the Ivory Gulls were numerous (as, for instance, in Murchison's Bay, in 80° N. lat.), that they will sit for hours at the holes in the stationary ice, through which the seals come up to lie on the ice, waiting for the seals appearance. They look as if sitting in council round a table; and this practice has doubtless given rise to the curious name used by Martens in 1675 for this Gull, viz., 'Rathsherr' (councillor), a name analogous

in its derivation to that of 'Bürgermeister' (mayor), used for the Glaucous Gull. Round these holes in the ice the resting places of the seals are coloured brown with their excrements, which are chiefly devoured by birds, only so much being left as will colour the snow. Martens says that he has seen the Ivory Gull feeding on the excrements of the Walrus."

"The Ivory Gull," so Professor Newton has recorded in the "Ibis," 1865, p. 507, "is of all others the bird of which any visitor to Spitzbergen will carry away the keenest recollection. One can only wish that a creature so fair to look upon was not so foul a feeder I have to add that contrary to the experience of almost all other observers, I once saw an Ivory Gull of its own accord deliberately settle on the water and swim. This was in the Stor Fjord. There is a very great variation in the size of different specimens of this bird, which is not at all to be attributed to sex, or, I think, to age; but I do not for a moment countenance the belief in a second species I here transcribe what Professor Malmgren, the fortunate finder of [the first well authenticated specimens of the eggs of this bird brought to Europe] says about them:—"On the 7th July, 1861, I found on the north shore of Murchison Bay, lat. 80° N., a number of Ivory Gulls established on the side of a steep limestone precipice, some hundred feet high, in company with *Larus tridactylus* and *L. glaucus*. The last named occupied the higher zones of the precipice. *Larus eburneus*, on the other hand, occupied the niche and clefts lower down, at a height of from fifty to a hundred feet. I could plainly see that the hen-birds were sitting on their nests; but these to me were altogether inaccessible. Circumstances did not permit me before the 30th July to make an attempt, with the help of a long rope, and some necessary assistance, to get at the eggs. On the day just named I succeeded, with the assistance of three men, in reaching two of the lowest in situation, which each contained one egg. The nest was artless and without connexion, and consisted of a shallow depression, 8 or 9 inches broad, in loose clay and mould on a sublayer of limestone. Inside, it was carelessly lined with dry plants, grass, moss and the like, and also a few feathers. The eggs were much incubated, and already contained down-clad young

"The locality just mentioned lies at the northern entrance of Hinlopen Strait I am, however, inclined to think the Ivory Gull breeds periodically in many other parts of Spitzbergen proper This species, like other Gulls, probably does not always breed in colonies; and as it is sure to select the most inaccessible places for the purpose, an occasional nest here and there might well escape notice."

According to Mr. Trevor-Battye the presence of ice has an attraction for the

Ivory Gull. If the ice depart; so do the birds—on its return the birds come also back. “I expect,” he says, “the explanation will be found in the fact that this truly Arctic species is greatly dependent upon seals’ ‘leavings’ of different sorts.”

Family—*STERCORARIIDÆ*.

GREAT SKUA.

Megalestris catarrhactes, LINN.

THE Great Skua, Skua-Gull, or Bonxie, as it is variously named, though truly a British breeding bird, is not a familiar one in the southern parts of the kingdom, except in very rough weather. It nests now only in the islands of Unst and Foula, in the Shetlands—where it is protected. During winter and autumn, a few individuals straggle southward, along the coasts of both England and Scotland. In Ireland it has been taken on a few occasions; but it has never bred there. Mr. Eagle Clarke’s account of the ruthless destruction of the bird, and the wholesale stealing of its eggs, shows that, unless some measures of protection are at once afforded to the Great Skua, this splendid member of our avifauna must soon be exterminated from Europe.

Its nests have been found in Iceland and the Færoe Islands; but none have yet been taken in North America, nor in Greenland, which it visits, though in the former, not improbably, breeding stations may yet be found. In winter it wanders to North Africa, on the eastern side of the Atlantic, and on the western, as far as the shores of Massachusetts. Its large size—it is as big as a Herring Gull—and dark colour, render it too conspicuous not to be distinguished at once from any other shore bird.

The female is in colour of plumage exactly similar to the male, but she varies



GREAT SKUA ♀

slightly in size, and may be larger than, or equal to, her mate. The feathers of the neck are stiff and acuminate. The general colour of the bird's entire plumage is deep umber-brown; the elongated neck feathers are streaked, those on the top of the head tipped, with brownish-yellow; the lower neck brownish-yellow; on the scapulars there is a pale area; wings dark brown; wing-coverts lighter; primary coverts and quills brownish-black, with their shafts white except towards the end; a large portion of the bases of the primaries of the same colour (which does not extend to the outer web of the outer quill) forming a conspicuous alar patch, seen on the under side when the bird is on the wing, as well as when it is at rest; inner secondaries brown, outer lighter; tail coverts brown, with a reddish stripe; the tail feathers blackish-brown; whole of the under surface reddish-brown, with redder shaft-stripes on the throat and upper breast; under wing-coverts dark brown, washed with reddish-brown; bill black; cere greyish-blue; legs and feet black. Length 23 inches; wing $15\frac{1}{2}$ to $16\frac{1}{2}$; tail, whose middle feathers are longer than the rest, $6\frac{1}{2}$ to 7; middle toe, with its claw, 3; tarsus $2\frac{3}{4}$.

The nest of the Great Skua is generally a hollow trodden in a heather bush, or a bank of moss; in which, as a rule, two eggs and sometimes three are laid. The nests are not, however, made in such large colonies as is the case with most of the Gulls—a few pairs only breeding in proximity to each other. They are generally to be observed in pairs together, each at a little distance from the next.

Mr. Richard Barrington has given, in the "Zoologist," an interesting account of his visit to this bird's breeding place in Foula. "We landed," he says, "on Foula at midnight, on June 22nd last [1890], from the mainland of Shetland, from which Foula is distant about eighteen miles. To the west of the island the cliffs are bold and striking, and form a jagged outline, which, for imposing grandness, is hardly to be surpassed. On the east and north-east the island is comparatively low, with cliffs varying from fifty to hundred and fifty feet, but there is no strand or stony beach anywhere, save where a mountain stream enters the ocean at a little creek in the rocks, and this strip of beach is only ten yards across

"Foula is about three miles long and two broad, and its highest point is the Sneug, 1372 feet. The highest cliff is the Kame, 1220 feet

"The island is not only bleak and exposed, but subject to sudden squalls of exceptional violence from the steep face of the storm-swept Sneug, the home of the Great Skua, towards which we went. With one or two exceptions the Great Skuas all breed on the southern face. The nest is merely a depression on the surface. They seem to scratch a little at first, then smooth the place with their breasts. In one or two cases some withered leaves of *Eriophorum* were round the edge, apparently broken off because they were in the way. Having heard and

read so much about the boldness of the Great Skua in attacking intruders during the breeding season, there was at first some disappointment at their apparent want of courage. There were no eggs or young in any of the four or five nests; this might account for it. Away down the slope, about half a mile away, Richardson's Skuas were seen, and a nest found with two eggs.

"Walking on towards the depression between the Hamnafeld and the Sneug, Great Skuas appeared more numerous, about ten pairs being observed within a radius of two hundred yards. Many nests were met with, but not a single egg. Up to this the birds had not come nearer than ten to twenty yards, flying past and across us, now and then uttering a croaking noise, "ag-ag," and sometimes alighting within thirty yards. Presently a pair became very bold, and when passing would swoop towards us. Thinking eggs or young must be close by, a delay was made to search carefully, and both Skuas then attacked us vigorously, so that our sticks were involuntarily raised to prevent them striking our heads. The *modus operandi* was this:—The Skua would start about sixty yards off, on the same level as our heads, and fly straight at us, not deviating an inch, and increasing in speed, then, when within a yard or two of our heads, the feet were lowered, claws extended, and with a terrific 'swish' and deep rushing noise of the wings, it would swerve upwards in a graceful curve, wheel then either to the left or right, descend again to the level of our heads, and repeat the performance with greater or less vigour, according as we approached or receded from the nest. The nests were sometimes within ten yards of each other, but more frequently thirty to forty yards asunder. I must have seen over sixty, but all had been robbed save one, and this one contained a single egg. It was the only nest seen at a lower level than eight hundred feet, and probably escaped the searching eyes of the native egg merchant. W. was more fortunate, and found in one spot a few nests with one to two eggs and one young bird. The general impression left was that the Great Skuas were flying round their robbed nests, intending either to make new ones close by, or lay a second time in the old nests. Three times only was I attacked in that extraordinary vigorous manner which has made the Great Skua so noted for its boldness; but, were the nests not robbed, and three or four pairs of Skuas defending their young at the same time, few visitors would have the courage to face them without a stick. The natives told me that in some instances the Skuas knocked off their hats, and have broken their wings against a stick suddenly held up as they swooped at the head of the intruder. No serious injury seems at any time to have been inflicted on a human being by a Skua. The birds probably weigh four or five pounds, and this weight striking a man on the head, and coming at such a velocity, would certainly kill him.

“In every case in which a pair of Great Skuas were seen together, as if nesting, one bird was dark and the other light coloured, and the inference was that the colours might be sexual. A dark bird was shot, and next day a light one was procured in another part of the island, also at a distance from the breeding grounds. The dark bird turned out to be a male and the light one a female. whether the colouring is associated with age or sex, or is merely a phase which both sexes may present, as in Richardson’s Skua, I cannot say. The fact that the dark bird is smaller may have been accidental, for the difference in size was not detected when the birds were sitting or flying past; but if not accidental, and constant, the stouter and older looking bill and claws in the light Skua is in favour of the age theory. When the Skuas were sitting on the ground, side by side, the difference in colouration was in every instance noticed.”

The eggs are laid in May and June. These are of an olive-brown ground-colour, with blotches of reddish-brown, or a darker brown, than the ground-colour, often entirely covering the larger end of the egg. They vary in length from $2\frac{1}{2}$ to $2\frac{3}{4}$ inches in length by $1\frac{1}{2}$ to 2 inches in breadth. The young emerge as down-clad chicks of brownish-grey, somewhat more rufous on the upper side. On becoming fully fledged the young birds assume at once the plumage of their parents, except for the shorter and less prominently pointed feathers of the neck, and the more rufous margins of the back feathers.

Mr. Saunders says that “beyond a certain freshness on the new feathers, there is no marked seasonal change, and the moult appears to be very gradual, the plumage of the neck and shoulders having generally a weather-worn appearance, as is also the case with many Raptores. Mr. G. T. Fox, who kept a bird alive for ten years, says it showed no change with age Melanotic varieties are occasionally met with, but the blackish tint is by no means intense.” What the dark and light coloured birds are, has not yet been settled satisfactorily, *i.e.*, whether the difference in hue is due to age or sex, or simple variation, as the above quoted observations of Mr. Barrington show.

The Great Skua has many of the habits of the Raptorial birds, though it does not seize and carry off its prey in its talons. It is a rapacious feeder, seizing and swallowing any bird it comes across, even as large as the Kittiwake. It causes other Gulls to disgorge the results of their fishing forays, and sometimes fishes on its own account. Dr. Edmondston gives it the character of being in captivity gentle and affectionate, and feeding on anything offered to it; but in defence of its eggs and young it is fearless and bold, and will attack either Raven or Eagle. In the Færoes it was, half a century ago at least, a proscribed bird, and, according

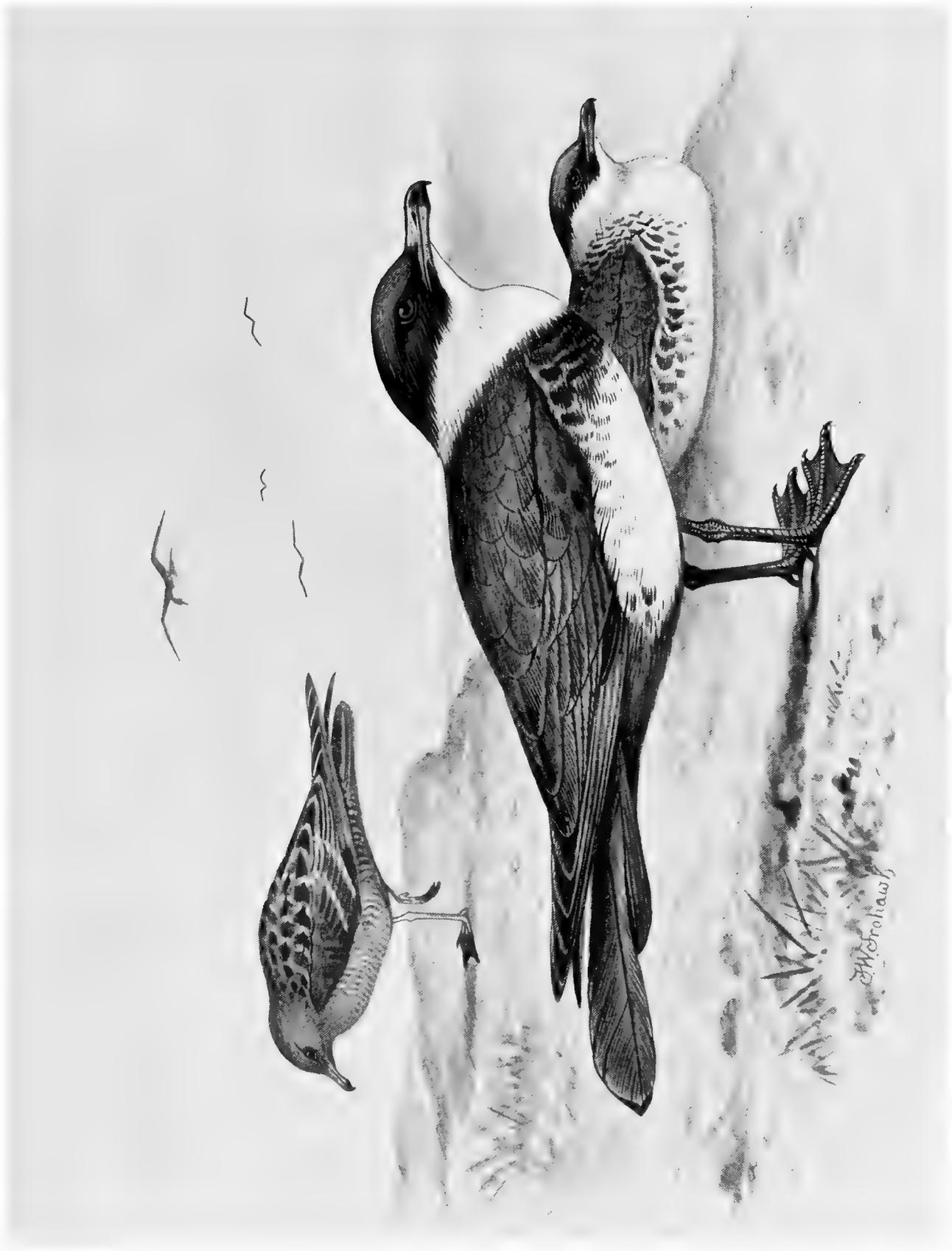
to Mr. Wolley, a certain number of heads were required to be sent in by every inhabitant annually. "I do not know," he says, "if this is now strictly enforced; but I have seen the people collect heads, when they had the opportunity, either of this bird, or the Raven, or the Great Black-backed Gull—that is when they were ready killed for them." A less precise injunction has been so efficacious in our islands as to reduce the numbers of these birds almost to the vanishing point. But for the magnanimous protection given to them on the Shetlands, they would by this time have long ago ceased to exist as a British Bird.

Family—STERCORARIIDÆ.

POMATORHINE SKUA.

Stercorarius pomatorhinus, TEMM.

THIS very fine bird is often named the Twist-tailed Skua, from the two much elongated central feathers of the tail being twisted on their shafts, so that the terminal part of the web stands vertical, and looks as if it had a "bob" to it. This peculiarity, however, is an excellent mark for identifying the bird by when on the wing. The Pomatorhine Skua is a very rare breeder in our islands, if indeed it has ever really done so. In their "Fauna of the Outer Hebrides," Harvie-Brown and Buckley note that:—"Though believed to breed, or to have bred, in the Outer Hebrides, there has been no corroborative evidence since Gray wrote; but there cannot be any doubt as to its frequent, if not regular, summer visits to the coasts of these islands, and the seas to the west of Lewis." It is an autumn and winter migrant, and a few are to be seen along the entire coast lines of England and Scotland almost every year. Occasionally large flocks occur, the coasts of Yorkshire being apparently a favourite rendezvous; and sometimes a few



POMATORHINE SKUA ♀ 1

IMMATURE ♀

individuals spend the whole winter in the more southern parts of Britain. In Ireland fewer specimens have been obtained. The bird is an Arctic species, and breeds round all the bare sub-polar lands north of 70°, making its appearance in its nesting haunts in the month of May from its southern retreats. The limit of its northern breeding range is unknown. In winter it migrates southward, across the equator even as far as Australia; down the coasts of Africa; and along the American shores, where, on its western side, it reaches as far as "Callao Bay, in Peru" (Saunders).

This species is smaller than the Great Skua; both sexes are alike, and in breeding plumage they have the top and sides of the head brownish-black; the long pointed feathers of the neck yellowish-white; on the lower neck the feathers are blackish-brown, tipped with grey; lower down they are white crossed by two bars of brownish-grey; back, wings, and tail brownish-black; primaries and tail feathers umber-brown, with white on the inner web near the base; shafts whitish; throat yellowish-white; under side white; the breast with a band of brownish-black bars; the sides, the abdomen and under tail-coverts barred with the same, the dark colour predominating over the white; under wing-coverts and axillaries uniform brownish-grey; bill bluish-grey, tinged with green, its tip corneous; legs and feet reddish-black. Length $20\frac{1}{2}$ - 21 inches; wing 14 - $14\frac{1}{4}$; tail 5 - $5\frac{1}{4}$, and with the long feathers it may reach 9; tarsus 2; middle toe, with its claw, 2.

The Pomatorhine Skua breeds in Greenland and, among other places, on the barren tundras of the River Taimyr, where Middendorff found its eggs, in July, lying on the moor without any nest. The eggs are similar to, but smaller and lighter than, those of the Great Skua. They vary from $2\frac{1}{2}$ - $2\frac{3}{4}$ inches in length, by $1\frac{3}{8}$ - $1\frac{5}{8}$; they are "indistinguishable from certain varieties of the eggs of Richardson's Skua and the Common Gull" (Saunders).

The young are covered with pale rusty-brown down. When fully fledged the head and back of the neck are reddish- or greyish-brown, margined with pale brown; back dark brown, each feather margined with brownish-red; tail-coverts barred with black and reddish-buff; wing and tail quills brownish-black, with their bases and inner webs and shafts white; under surface "varying from numerous bold striations of brown and rufous, to an ashy-brown with faint striations, and again to an almost uniform dull brown" (Saunders); tarsi, with hexagonal scales all round, and blotched with blue and grey; bill bluish-grey, tip black; toes blackish. According to Mr. Saunders, the more advanced but immature bird has the neck yellowish, and the under parts, the flanks, upper and under tail-coverts barred with black and white, and the under wing similarly mottled; the central tail feathers seldom project more than two inches, and they are not twisted at the

ends. "Melanotic individuals," the same author adds, "—considered to be adults from the fact that they show more or less yellow on the neck—sometimes occur, but I do not think that any of these are really mature birds." As the birds become older the yellow on the neck increases and the barring on the flanks and tail coverts, and the neck band, decrease. The adult winter plumage of this species is the same as the summer; but until the birds are quite mature, striated feathers may appear on the flanks and tail coverts.

The Pomatorhine Skua "seems to feed chiefly, if not entirely, at the expense of the smaller Gulls, which it causes to disgorge their newly obtained food, to be caught in its descent. Its flight is extremely rapid, ordinarily performed by rather quiet flaps of its long wings, but, in pursuit, by various movements in the manner of a Hawk. It has not been seen to prey upon birds of any kind, nor even to strike with its wings, or otherwise, those which it chases for the contents of their gullet" (Macgillivray). Richardson saw it, in Hudson Bay, feeding on putrid fish, and other animal substances; and Von Heuglin asserts that in Novaya Zemlya it feeds on lemmings, and watches for them, and when they emerge drops upon them like a Hawk.

"Immense numbers," according to Mr. Booth, "of both old and young pass over the North Sea while on their return journey from their summer haunts. The first comers may usually be noticed off the south-east coast of Scotland about the middle of August. The earliest arrivals are for the most part, if not entirely, composed of birds exhibiting a state of plumage which I should judge (from the change of those kept in confinement) to be that preceding the assumption of the perfect adult dress." The same author notes that in 1879, during a very stormy October, hundreds and thousands of Skuas were blown on our northern and eastern coasts. On the 30th of the month, during heavy squalls of rain and mist, a Skua here and there "would be seen occasionally settling on the sand-banks, evidently desirous of obtaining rest, though the repeated attacks of the swarms of Grey Crows, collected on the beach, forced these weary travellers to take wing almost as soon as they alighted. A perfectly black bird, with long tail feathers, attracted my attention on several occasions when driven up from the water's edge. Each time the Crows approached, with harsh screams and croaks, the stranger rose on wing and made his way slowly to windward, returning again after a short interval drifting in circles before the squalls By the end of the first week in November, the greater part of the adults had passed south; immense numbers must, however, have perished from the effects of the continued gales."

Mr. Booth believes that Pomatorhine Skuas are five years of age before they attain their perfect plumage. He kept a number of specimens of this species in



RICHARDSON'S SKUA ♂

confinement. The distinction between the dark and light forms, he avers, is apparent in the earliest stages. Though birds showing white breasts when adult are by far the most numerous, it is easy to trace the two forms in every stage of plumage through which they pass. The order of the autumnal migration of the Pomatorhine Skua appears, from Mr. Booth's observations, to be: first, birds in intermediate plumage, followed by the adults in winter garb, and last of all, the young birds.

Mr. Pearson remarks that he thinks, from observations made in Novaya Zemlya, that some birds, especially the Skuas, "do not breed in bad seasons. If this idea should prove a fact, it may be a provision of nature to prevent the Skuas becoming too numerous. They are well able to defend their eggs and young from the birds of prey found in the same countries, and equally capable of taking care of themselves; so the only foes they need fear are old age and deficiency of food."

Family—STERCORARIIDÆ.

RICHARDSON'S SKUA.

Stercorarius crepidatus, GMEL.

RICHARDSON'S Skua, or, as it is often called, The Arctic Skua, is a breeder within our area, and is much commoner than the Great Skua. It does not nest, however, south of the island of Jura, although it occurs along all the coasts of both Great Britain and Ireland during autumn and winter. It was in Jura that it was first found nesting in our islands, by Pennant, in the year 1772.

Richardson's Skua breeds in the Orkney and Shetland Isles. Of the Orkney Islands—where it is known as Scotti-allen—Hoy is now the only member in which it builds, and even there "it is limited to the parish of North Walls.

Here they are abundant, several pairs being generally found in pretty close proximity, and very often establishing themselves amongst a colony of Gulls, with whom they live peaceably enough at their breeding stations" (Buckley and Harvie-Brown). In Shetland the islands of Noss and Mousa are the Skua's chief rendezvous. The Shetlanders call the bird Shooi. In Caithness it used to breed abundantly on the wide moors and marshy tracts of the interior of the county; but the bird has been, within recent times, almost exterminated by game-keepers. One pair breeds in the same spot every year. The Hebrides is also among this bird's nurseries—where it goes by the name of Fasgadair. It breeds on Stuala Island, Uist; in Tyree; in the Inner Hebrides there are "certainly two large scattered colonies of Richardson's Skuas nesting, one of which may consist of over one hundred pairs scattered over a large area" (Harvie-Brown and Buckley). As already mentioned it breeds, as it has done for over a century, in Jura—which is the southern limit of its range.

It breeds in all the arctic and sub-arctic regions of both the eastern and the western hemispheres. In winter it ranges south along the coasts of Africa down to the Cape, and from Eastern Asia down to Australasia, and along the Atlantic coasts of America south to Rio de Janeiro.

Like the Pomatorhine Skua, the present species has two phases of plumage, one entirely umber-brown, and the other brown on the upper side and white on the breast, with brown bars on the sides and chest, and this in both sexes more or less persistently throughout life. The males and females of both phases resemble each other.

The pale-breasted adult, in breeding plumage, has "the feathers at the base of the bill dull white; forehead and lores ash-brown; crown and occiput darker brown; hind neck dull white, shading into ash-brown on the shoulders, and thickly streaked with golden straw-colour; mantle, wings, tail-coverts and tail-quills darker brown; the secondaries blackish; the shafts of the principal primaries white, under tail-coverts, abdomen and under wing ash-brown; breast and chin dull white; throat and sides of the neck whitish, streaked with straw-yellow; bill brownish horn colour, darker in front of the cere; tarsi and toes black" (Saunders).

The dark coloured adult is similar to the light breasted form, but is "washed with sooty throughout, the under parts being nearly as dark as the mantle, which is of a deeper tone than in the pale breasted form; the acuminate feathers of the neck yellow, but not so strongly contrasted; bill rather blacker" (Saunders). Length $21\frac{1}{2}$ inches; wing $13\frac{1}{2}$; tail $5\frac{3}{4}$, and to the end of the elongated feathers 9—the elongation of the central feathers of the tail is one of the characters which separate *Stercorarius* from *Megalestris*; tarsus $1\frac{2}{3}$; middle toe, with its claw, $1\frac{5}{8}$ —

the invariable greater length of the toe and claw than the tarsus is a characteristic of *Stercorarius*.

Richardson's Skua builds in groups, scarcely to be called colonies, with their nests set a considerable distance from each other: on heaths far from the sea; in a hollow amongst hills; in low, wet, mossy heaths, in exposed situations; in Caithness, "a low and remote piece of moorland, studded by numbers of small lakes, containing mossy mounds and islands of varied size and shape" (Osborne). The nests are shallow hollows in the ground, the heather, or the mossy mounds they affect, about seven or eight inches in diameter, lined with dead leaves, sedges and grass. The female lays two eggs, of a ground colour which varies from shades of green to shades of brown, spotted, blotched or streaked with reddish- or blackish-brown or purplish-grey; sometimes sparsely distributed all over, or congregated toward the larger end. They vary in length from $2\frac{1}{8}$ to $2\frac{3}{8}$ inches, by $1\frac{1}{2}$ to $1\frac{3}{8}$ in breadth. They closely resemble specimens of the eggs of the Pomatorhine Skua, and of the Common and other Gulls. It is easy to discover the nest of the Skua by the behaviour of the parent birds. When the eggs are newly laid they do not seem to have the same solicitude for them; but when they are hard set, or when the chicks are in the nest, they swoop down in a very menacing manner upon the intruder.

The young emerge covered with long, soft, sooty-grey down above, paler beneath; but the nestlings of the differently coloured parents vary much.

The parents may be both dark; or one dark and the other white-breasted; of which either colour may be a male or a female. The young from the union of these differently coloured parents are, when adult, intermediate in character, "having a dusky whitish throat, more or less of an ash-brown on the flanks" (Saunders). Mr. Dunn writes that he has taken the fully fledged young birds of a dark brown colour, the parents of which were light breasted; and, on the contrary, light coloured young birds from dark coloured parents.

Mr. Saunders describes the immature birds as streaked and mottled with various shades of brown on the upper surface, the mantle chiefly umber; upper tail-coverts barred with dark brown, white or rufous; the under surface more or less barred with brown on a paler ground.

The offspring of two white-breasted birds is pale cinnamon-brown on the head and under parts, with dark streaks and bars; the feathers of the upper parts umber-brown, with rufous edges. The offspring of two dark birds is much darker, with greyer tips to the feathers; while the offspring of one white-breasted and one sooty bird is intermediate.

The winter plumage of this bird is the same as that of the last species.

The habits of Richardson's Skua are graphically described by that accurate observer, Dr. Macgillivray . . . "there comes gliding from afar, with swift and steady motion, a dark and resolute looking bird, which, as it cleaves a path for itself among the white Terns, seems a messenger of death His victim, light and agile, attempts to evade the aggressor. It mounts, descends, sweeps aside, glides off in a curve, turns, doubles and shoots away, screaming incessantly the while. The Sea-Hawk follows the frightened bird in all its motions, which its superior agility enables it to do with apparent ease. At length the Tern, finding escape hopeless, and perhaps terrified by the imminence of its danger, disgorges part of the contents of its gullet, probably with the view of lightening itself. The pursuer, with all his seeming ferocity, has no designs upon the life of the poor Tern, and now his object is evident, for he plunges after the fallen fish, catches it in its descent, and presently flies off to attack another bird. In this way the marauder makes his rounds, exacting tribute from all whom he thinks capable of paying it, and not sturdy enough to resist oppression."

Mr. Trevor-Battye, in his "Ice-bound on Kolguev," says:—"We saw a great deal of the Arctic Skua Although greatly dependent, when at sea, upon the labours of other Gulls, the breeding pairs are as persistent robbers of eggs as Rooks in a dry season, and may be constantly seen quartering the tundra for eggs or young. I should be inclined to estimate that, of breeding birds on Kolguev, there is about one pair to every seven square miles of country. We never found a colony, nor even two pairs together. All those I saw belonged to the light-coloured race. On June 29th we took eggs about half incubated. The nest was among dead water grass in a bog, and was more than a mere depression, for grasses had been walled into a lining. A nest containing one egg (July 7th) was a simple depression in dry grass; the egg had a remarkable escape. We were driving along—four sleighs, which meant eighteen reindeer—when I called out to Hyland [Mr. Trevor-Battye's 'honest and faithful companion' on Kolguev], who was in front, to stop; for some thirty yards or so away, a pair of Skuas were behaving as though they had a nest. However, we could make nothing of it, and had just taken our seats again to start off, when, as I stooped down to disengage the hind leg of one of my deer, lo! and behold, there was the nest under my sleigh. The whole train of sleighs had passed over the nest, and yet the single egg was not broken."

Mr. Trevor-Battye describes the way these birds "carried on" when one was near their nest as "past description." "They tried," he says, "to lead us away from the nest by every conceivable device. They pretended that their eggs were in two or three places other than where they really were. One very striking phase



BUFFON'S SKUA ♂

of the performance was the following:—A bird would drop on the water as if dead. Then it would flap helplessly for a bit, and if this did not move you, it would raise itself on its tail, beating forwards slowly with its wings and mewing like a cat. 'Mewing' exactly describes the sound. On August 7th we picked up a young Skua and brought it back alive. The bird was almost full grown, and had well developed primaries. Its parents showed no anxiety about it. It was beside a lake, and as we approached ran and hid in some grass. It bit viciously but made no noise. . . . I never, in any single instance, knew an Arctic Skua stoop at a visitor near its nest; on the contrary an intrusion was met by every wile of allurements. It was the old game of 'cold or hot'; until at last, when you stood close to the nest, both the birds were reduced to a state of helplessness. At such a time they behaved exactly alike. Sitting on their tails either in the water or on the grass, and beating forward with their wings, they mewed all the time like cats."

Richardson's Skua will fiercely attack dogs, and even cattle that approach too near its breeding grounds.

The adult of the present species may be distinguished from the adult Pomatorhine Skua by its smaller size and its elongate tail feathers.

Family—STERCORARIIDÆ.

BUFFON'S SKUA.

Stercorarius parasiticus, LINN.

BUFFON'S Skua, the smallest of the genus, was long confounded with that last described—namely, Richardson's—from which, however, it is distinguishable by its size. This species does not breed in the British Isles; but it occurs as a straggler in winter, especially during, or immediately after, stormy weather, along both the east and west coasts of Scotland and England. It has been more frequently met with between the north of Scotland and the Yorkshire coast than elsewhere on the east coast; it has occurred more rarely on the west coast of England. Mr. Edmund Elliot, of Kingsbridge, South Devon, has kindly sent us

a note on the occurrence of a flock of this bird to the Devonshire coast, on the afternoon of October 14th, 1891, when the south-westerly gale, which had been blowing continuously for more than forty-eight hours, seemed to reach its climax. "Just as daylight was waning, a large flock of Buffon's Skua suddenly came in from the sea and settled on the sands, well out of reach of the incoming tide. They appeared quite exhausted, and allowed a near approach, getting up one by one, flying a short distance and settling again. Many birds were secured which were found to vary much in plumage, the majority having mottled feathers, grey, brown and white in irregular patches, the under parts especially varying in degree of white; two or three were assuming adult plumage, and had the central tail feathers quite five inches longer than the rest. One bird was chocolate-brown all over. The webbed feet of all the specimens were marbled. During the same gale specimens of Buffon's Skua were observed along the south coast of Devon and on the Bristol Channel, on its north coast." In Ireland, this Skua is of occasional occurrence, in autumn, on some parts of the north and east coast.

The breeding range of this species is mainly to the north of the Arctic Circle, but it nests in some of the high Scandanavian fells. In winter it migrates southward, along the western coasts of Europe, to the entrance to the Mediterranean, and down the eastern side of America, as also on its Pacific coast, as far as 40° N.

This species very rarely exhibits the peculiar plumage phases of Richardson's Skua. The female is similar to the male, except that she has, perhaps, the central tail feathers shorter than those of the male.

In breeding plumage the front, crown, nape and sides of the head blackish-brown; lower cheeks and neck white, washed with deep yellow; mantle and scapulars greyish-brown; "primaries darker and blackish towards the extremities; shafts of the two outer pairs of quills white, but those of all the rest distinctly brown" (Saunders); upper tail-coverts and tail brownish-black; the elongated, tapering, central tail feathers ashy-grey at base, brownish-black elsewhere; the abdomen, sides of body, and under surface of wing, and under tail-coverts, dark brownish-ashy; throat and breast white, passing into yellow at the neck; bill corneous; legs bluish-black; toes black; webs black. Length 22 inches; wing 11½; tail 5½, to the end of the elongated central feathers 14; tarsus 1½; middle toe, with its claw, 1½. "The distinctly grey tint is very characteristic of this species in all stages" (Saunders). The elongate acuminate feathers of Buffon's Skua distinguish it from the Great and the Pomatorhine Skuas.

In June, this bird forms a nest simply by depressing the grass or moss, and herein deposits two eggs, which are indistinguishable by colour from those of Richardson's Skua, and of about the same size. Mr. Pearson found, in Russian

Lapland, one nest with two eggs, placed near the centre of a large isolated mass of peat, standing about three feet above the level of the surrounding bog, and therefore dry. The nest itself was a very slight depression, lined with a few bits of lichen.

From the eggs emerge chicks covered with greyish-brown down, darker above, paler below. When fledged the young birds are sooty-brown above; the mantle, the flanks, the upper and under tail-coverts tipped with buff; under surface greyish-white, barred with ash-brown. Older, but immature, birds differ from adults in the under parts and upper tail-coverts being barred with varying degrees of ash-brown, and very little yellow on the sides of the head (Saunders). The winter plumage of this Skua is similar to that of the Pomatorhine Skua.

Buffon's Skua feeds on crow-berries (*Empetrum nigrum*), crustaceans, fishes, insects, worms, but chiefly on lemmings. It will attack and also devour wounded birds, and the eggs and young of any species it comes upon. Like its cousin, last described, it keeps up the reputation of the family for piracy committed against Kittiwakes and other Gulls, which are too weak to withstand its bullying. In Greenland, Mr. Trevor-Battye found the birds "astonishingly bold, hanging round the camp for chance morsels. We caught one or two in muffled toothed traps. One of these settled down at once and fed readily. When I was alone in Dickson's Bay, two pairs nesting there were astonishingly valiant. Each time I passed their nesting ground they set at me, not stooping from a height as a Gull does, but each in turn coming straight at one's face with a long wing-stroke, and a rapid level flight, so that it demanded some little resolution not to duck one's head. But when about a yard from my face they always 'threw up' and passed over my head with a wind, and so close that I touched them on several occasions with my hand. Each bird kept crying incessantly until the moment came for the straight fly-in, and then it stopped and came on silently."

Captain Fielden, who was naturalist to the Arctic expedition of 1875-76, says that the present was the only species of Skua Gull that he met with in Smith Sound. "It arrived in the neighbourhood of our winter quarters," he records, "during the first week of June, and in considerable numbers. After that date it was to be seen during every hour of the day quartering the fells and searching for lemmings. It lays its two eggs in a small hollow on the ground, and defends its nest with the utmost bravery. On several occasions I have struck the old birds with my gun barrel when warding off their attacks as I plundered their nests. This species can easily be distinguished from its near ally *S. parasiticus*, at every age, by the mottled colour of the tarsus and webs of the feet, which in *S. parasiticus* are black."

ORDER PYGOPODES.

THE Order Pygopodes was established for a group of birds consisting of the Auks (*Alcidae*), the Divers (*Colymbidae*), and the Grebes (*Podicipedidae*). In these birds the power of diving and remaining under water is largely developed, and although, according to some authorities, their arrangement in one group (to the exclusion of some other families) is not warranted by their respective structures, the Order thus made up is a convenient and, in many ways, a natural one.

O. V. APLIN.

FAMILY ALCIDÆ.

THE Auks (*Alcidæ*) are restricted to the northern hemisphere, and some of them have an arctic range during the breeding season. The greater number of the species are found on the shores of the Pacific ocean, and the North Pacific is the chief home of the family. All the species are migratory to some extent, more or less. All are marine in their habits. In the breeding season they are eminently gregarious; indeed, the vast numbers of these birds which gather together at that season, at some of their nesting cliffs, afford one of the most wonderful and interesting sights which the student of field ornithology can meet with.

In the Auks the feet are three-toed and completely palmate or webbed. The feet of these birds are placed very far back, and the position of the birds, when standing, is nearly upright. Some of the species rest, when in this position, upon the whole foot and tarsus, and walk badly; others rest upon the foot only, and walk more readily. The wings in all the species are small (and in one species were so small as to be useless for flight), but (with the above exception) the birds fly well and fast, with rapidly beaten wings. The tail is short. The food of the Auks consists of fish and small marine animals. In the case of most of the species a single egg is deposited, but in some two are laid. The young are hatched covered with down, and can swim at a very early age. The eggs, which are deposited on rocky ledges, in crevices of, or under rocks, and in burrows, have the ground colour whitish or greenish, and are usually conspicuously marked with spots or streaks.

The *Alcidæ* have been divided into two subfamilies, the Puffins and the Auks (including the Guillemots). In the former the nostrils are naked, while in the latter they are more or less feathered. Nine species of Puffins have been enumerated (and one subspecies), which, with one exception, are confined to the North Pacific and Polar seas. The seasonal changes of plumage in these birds are slight, but "all these birds have the bill appendaged with deciduous elements, which is not the case with the *Alcinæ* proper" (Coues). Twelve or fourteen species and subspecies of Auks, Guillemots and Murrelets are known, which are found in the North Pacific and the Atlantic, and in the Polar seas. The plumage of these birds undergoes considerable seasonal changes, and their bills which, although not so remarkably developed as in the Puffins, form, in some cases, a noticeable feature, do not attain their full size in the bird's first year. As in the Puffins, the sexes are alike in plumage.

Family—*ALCIDÆ*.

RAZORBILL.

Alca torda, LINN.

THE Razorbill frequents, for breeding purposes, certain rocky and precipitous parts of the coast all round the shores of Great Britain and Ireland; it is usually associated with the Guillemot, than which it is always less abundant, and in recent years a considerable diminution in the numbers of the former species has been remarked upon.

In the Orkneys, Shetlands, Hebrides, and some stations in Scotland, it is abundant, and numbers resort to the cliffs of Flamborough Head; but on the Farnes it is now one of the least common of the birds which inhabit the islands. Very few appear to breed on the Sussex cliffs at the present time. It resorts to the cliffs of the Isle of Wight, and to those of Dorset in numbers. In some spots on the North and South coasts of Devon it breeds sparingly, and it is more abundant on Lundy Island. Further west it is found breeding in Cornwall and South-west Wales, while a few pairs are found at New Quay Head, and colonies exist on the coast of North Wales, and on the Isle of Man. In Cumberland it breeds at St. Bees. It breeds in suitable localities on the coast of eleven of the Irish counties, according to Mr. Ussher's valuable account of the distribution of birds in Ireland during the breeding season.

Its arrival at, and departure from, its breeding haunts takes place at about the same time as the Guillemot's. During the rest of the year it may be met with in numbers in the tideway of the open sea, a few miles from land, where it follows the shoals of small fish. Except at the end of summer, when the young birds are still small, and in bad weather, it seldom comes close in shore, but it frequents open bays and wanders far up the Bristol Channel. Proof of the presence of the Razorbill, at no great distance from our shores, is often forthcoming in the shape of numbers of their dead bodies washed up after heavy gales from seaward. Storm-driven birds have been found inland.

The Razorbill is an inhabitant of the North Atlantic. It breeds in the Færoes, Iceland, Norway, Sweden, and some of the Baltic Islands, and on the north and Brittany coasts of France, but has not been found breeding on the coast of



SUMMER

RAZORBILL AD. ♂

AD ♀ WINTER

the Spanish Peninsula. In Norway it breeds on Svaerholtklubben, and possibly beyond 71° N. latitude. I saw some off the coast about the borders of Finmarken, just north of 70° N. latitude, in June 1896. Seebohm says that Henke found it breeding on the island of Onega, in the White Sea. But it does not breed on Spitsbergen or Novaya Zemlya; and as to the Pacific, Seebohm says the only record is doubtful. There seems to be no doubt but that it has been met with on Jan Mayen Island ("Zoologist," 1890, p. 45). A few pairs still breed in a deep cleft in a rock on Heligoland.

On the American side it breeds in great numbers in the Gulf of St. Lawrence, in Newfoundland, Nova Scotia and Labrador; and in Greenland, Col. Feilden, who accompanied the Polar expedition on board H.M.S. *Alert*, found the Razorbill breeding in considerable numbers at Ritenbenk—about lat. 70° N. ("Zoologist," 1878, p. 380).

In winter the Razorbill is said to go down the Atlantic some distance beyond the mouth of the Mediterranean, and a good many enter that sea. With regard to the Italian coast, Professor Giglioli states that he would not be surprised to hear that the Razorbill occasionally breeds in the Mediterranean. Two examples in summer dress were shot near Genoa on the 16th May, 1880, and there are two specimens in the Museum at Syracuse ("Ibis," 1881, p. 221). On the American side it goes south in winter as far as the middle States; two specimens, probably storm-driven, have occurred on Lake Ontario.

The Razorbill resorts to rocky cliffs and islets for breeding purposes, and lays its one egg in the early part or middle of May. This is usually deposited in some cleft or crevice in the rock, or under a rock; it is, however, also deposited in some cases upon shelves or ledges on the face of a cliff.

The single egg is shorter, rounder and less pointed than that of the Guillemot. They measure about 2.9 inches long by about 1.85 broad, but are subject to variation. The ground colour varies from white to pale reddish-brown; it is rarely white tinged with faint bluish, and never green. The markings are usually in the form of blotches and spots of various sizes, and less commonly take the form of streaks. The blotches occasionally are confluent, and form a broad zone round the larger end of the egg. The markings are dark brown, red-brown, or black, and there are under markings of a greyer tint. Both sexes are said to incubate.

When Razorbills and Guillemots occupy the same breeding station, as they often do in great numbers, they are not usually found breeding in close proximity. Their separation is probably to be accounted for by the preference shown by the respective birds for slightly different breeding sites, the present species preferring to deposit its eggs within a crevice, while the Guillemot affects an open ledge.

Thus at Flamborough, although I did not observe any signs of the two species objecting to one another's near neighbourhood, certain parts of the cliffs, from their nature and formation, are found to be more resorted to by Razorbills than others.

Young and old leave their breeding stations in August; I have seen adults in summer dress, and immature birds small enough to retain the black throat, in the first week in September, close in shore on the Norfolk coast, and have known the young obtained there when only half grown, while I was assured that quite small birds in down are sometimes procured. A careful and trustworthy observer told me that he once saw an old bird off shore accompanied by *two* young ones, and that the parent looked from side to side at them and took the greatest care of them both. I have not been able to discover any recorded instance of a Razorbill hatching two eggs, nor can I think this possible; but Mr. McIlwraith states that the eggs are "one or two" ("Birds of Ontario"). No authority is, however, given for the statement.

The Razorbill when beneath the surface, uses its wings and flies through the water; Seebohm says it is aided by its feet. It flies rapidly in a direct line, but naturally has no great command of wing. The old birds are very tame in the breeding season, and allow a boat to come within a few feet of them before diving out of the way. They have a much neater appearance on the water than Guillemots, which have a way of poking their heads forward; Razorbills hold their heads drawn further back; their longer tail sticks up conspicuously. They are often seen dipping their heads under water, probably picking up some food near the surface. On the cliffs they may sometimes be seen sitting with their formidable beaks partly open, and sometimes a mild fight takes place. I once saw a pair fondling one another with their beaks—at least they appeared to be doing so; they certainly "billed" after a fashion, if they did not exactly coo.

The Razorbill is considered to be a far from noisy bird, but at a large breeding station it is difficult to say how much, if any, they contribute to the babel of voices which occasionally breaks out. Its usual note is a low croaking noise, but it is seldom heard. The cry of the young bird is loud and shrill; Saxby says it is between a chirp and a whistle.

The food of the Razorbill consists chiefly of the fry of fish (carried diagonally in the bill according to Mr. Saunders), procured by diving, or picked up by dipping the head below the water in times of great abundance.

In winter, previous to stormy weather setting in, the birds have been observed to be very restless, and to change their quarters. And during long continued stormy and bad weather they suffer greatly from hunger. The great destruction which takes place among these birds (to a greater extent than in the case of the

Guillemot) in heavy gales, is largely due, in most cases, to the birds being weakened by want of food, those washed ashore being usually very thin; and the Razorbill, although it occasionally gets enormously fat, like other fish-eating birds, is probably capable of only a very short fast. Heavy gales from seaward at the close of summer, before the birds have completed their moult, are also destructive; but probably some difficulty which the Razorbill experiences in procuring food while the sea is much agitated, largely accounts for the great mortality which occasionally takes place among the individuals of this species.

The Razorbill has a great many local names; the following have been culled from various ancient and modern authors:—Murre, Marrot, Falk, Oke, Willock, Parrot-billed Willock, Tinkershire, Skort. In winter dress it was the Black-billed Auk of the older authors. At Flamborough it is known as the Auk, which is, of course, a form of the modern Norsk Alke.

The adult in summer has the iris brown; bill compressed and much arched, black, the upper mandible crossed by a white line, immediately behind which is a well-defined ridge, and the anterior portion of the bill is crossed by two furrows. The lower mandible is crossed by a white line and two shallow and indistinct furrows. Chin, throat, lores, upper part of the fore neck and sides of neck very dark velvety brown; rest of the head, neck, back, wings and tail black, with a slight greenish gloss. From the base of the culmen a narrow clearly defined white line extends to the eye; tips of the secondaries and all the rest of the under parts white, which extends on to the fore part of the lower neck. The tail is longer than that of the Guillemot, and wedge-shaped. Legs and feet blackish.

In winter the upper parts are usually duller; the chin, throat (a small portion along the edge of the lower mandible remains dark), sides and fore part of the neck, lower face and sides of the head are white, more or less mottled on the last with dusky, the light colour extending on to the sides of the nape; legs and toes dusky black, brownish on inside of tarsus and inner toe; membranes dusky black; inside of mouth pale yellowish-buff. Length about 16.75 to 18 inches; wing 7.5 inches.

In a young bird killed in January, the white line on the head is indistinct, the bill is much smaller (the line of the culmen only rising slightly from its base) than in the adult, and is without the white line and grooves. By the following September the culmen has become more arched, and the bill is grooved at the base, although much less markedly so than in the adult.

The clearly defined pure white line from the bill to the eye appears for the most part to pertain to the summer dress only.

The bird probably does not breed until its second spring at least.

An old bird, killed in September, weighed 24.5 ounces.

The young bird is covered with long brownish-black down, except on the lower breast and belly, where it is dirty white. Before it is full feathered it has the throat and neck blackish, and resembles the parents in summer to some extent; but white feathers replace the dark ones at the end of summer, when the young bird is full grown.

Family—ALCIDÆ.

GREAT AUK.

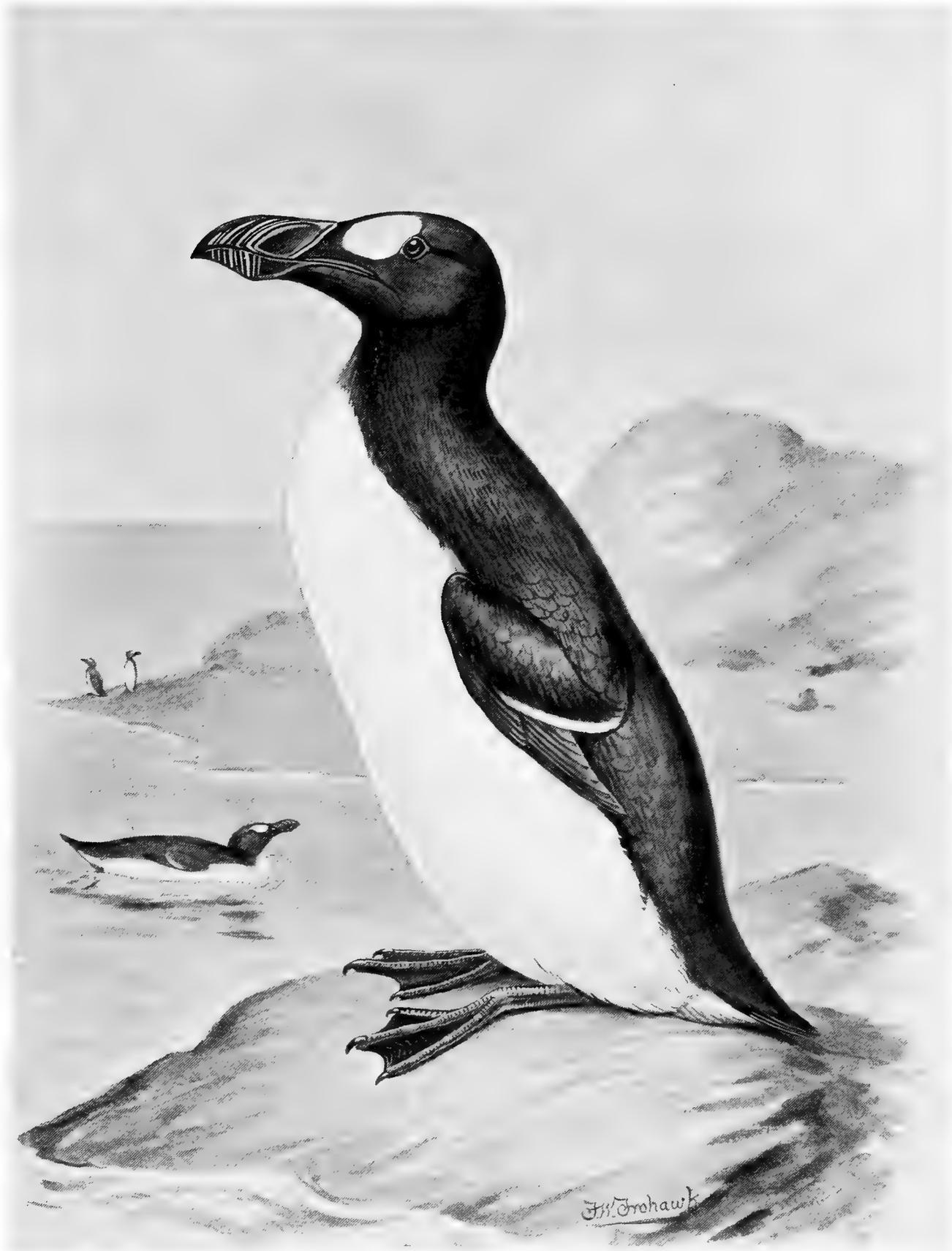
Alca impennis, LINN.

THE Great Auk, or Garefowl, which formerly inhabited certain portions of the Atlantic coasts and islands of the northern hemisphere, is now, there seems to be no reason to doubt, entirely extinct.

The Great Auk has an extensive literature of its own, and the following slight sketch of its history has been compiled chiefly from the writings of Professor A. Newton, and from Mr. Symington Grieve's monograph of the Great Auk, and the subsequent papers which he has published, with a view to bringing together all the more recent available information relating to this extinct bird.

The common idea that the Great Auk was an Arctic species is a mistaken one. As pointed out by Professor Newton, this bird did not possess a very high northern range. There are, indeed, few records of the occurrence of the Garefowl within the Arctic Circle, and these are open to doubt.

The Great Auk, so far as has been ascertained, seems to have had building stations in the following localities:—St. Kilda, Orkney, possibly Shetland, the Færoes, the three Garefowl rocks off the coast of Iceland (each known as a *Geirfuglasker*, or Garefowl skerry), Danells, or Graahs Islands (also known as



GREAT AUK ♂ $\frac{1}{3}$ SUMMER PLUMAGE

From a Specimen in the British Museum, which was captured on Papa Westra Island, Orkneys, in 1812.

Gunubjornsskjoerne) on the east coast of Greenland, since closed up by the ice, consequent on a great lowering of the temperature; some islands (notably Funk) off the coast of Newfoundland; some of the islands in the Bay of St. Lawrence, and at Cape Briton and probably Cape Cod. It was apparently more abundant in the vicinity of Newfoundland than elsewhere.

Specimens have been obtained in England, Ireland, Germany, Norway and Sweden; while remains have occurred in parts of Scotland, England, Ireland, the United States, and Denmark. It is usually stated that the last pair of Great Auks were killed on Eldrey Island, in 1844; but another is said to have been killed near Vardö, in 1848 ("Bird Life in Arctic Norway"). The late Colonel H. M. Drummond-Hay used to relate that, in returning to Europe in 1852, he saw, when on the edge of the Newfoundland banks, a Great Auk within thirty or forty yards of the steamer.

"The natives in the Orkneys informed Mr. Bullock, in his late tour through those islands, that one male only had made his appearance for a long time, which had regularly visited Papa Westra for several years. The female (which the natives call the Queen of the Auks) was killed just before Mr. Bullock's arrival. The King, or male, Mr. Bullock had the pleasure of chasing, for several hours, in a six oared boat, but without being able to kill him, for though he frequently got near him, so expert was the bird in its natural element, that it appeared impossible to shoot him. The rapidity with which he pursued his course under water, was almost incredible" (Montagu). This bird was afterwards captured by some fishermen, who killed it and sent it to Mr. Bullock. At his death it was purchased for £15 5s. 6d. and placed in the British Museum. It is said that the fishermen enticed it to the side of the boat by holding out a few fish, and then struck it with an oar.

In 1821 a bird was captured at St. Kilda by Donald M'Queen, and others. From these men the bird was obtained by Mr. Maclellan, the tacksman of Glass or Scalpa, and the Rev. John Fleming (author of the "History of British Animals") obtained it as he was leaving Glass on board the yacht of the Commissioners of the Northern Lighthouses, on the 18th August. Fleming states "this bird was emaciated, and had the appearance of being sickly, but in the course of a few days became sprightly, having been plentifully supplied with fresh fish, and permitted occasionally to sport in the water, with a cord fastened to one of its legs to prevent escape. Even in this state of restraint it performed the motions of diving and swimming under water with a rapidity that set all pursuit from a boat at defiance. A few white feathers were at that time making their appearance on the sides of its neck and throat, which increased considerably during the

following week, and left no doubt that, like its congeners, the blackness of the throat-feathers of summer is exchanged for white during the winter season" ("Edinburgh Philosophical Journal"). It is rather uncertain what became of this bird. One account says that it escaped, and it is supposed that it afterwards died and that its body was cast ashore at Gourock.

A Great Auk was captured alive in Waterford Harbour, in May, 1834, by a fisherman who, by throwing sprats to it, attracted it within reach of a landing net. It was kept alive for some time, and after its death was preserved and is now to be seen in the Museum of Trinity College, Dublin. Another bird is said to have been obtained about the same time, but it was not preserved.

Wallace (in a work published in 1769) mentions a Penguin, a curious and uncommon bird, taken alive at the island of Farn "a few years ago," which grew so tame and familiar that it would follow its owner, with its body erect, to be fed.

There is a story about a man called M'Queen and two other men capturing a Garefowl on Stack-an-Armin, off Borera, in the St. Kilda group, about 1840. Lauchlan M'Kinnon, the survivor of the three men, questioned by Mr. H. Evans, of Jura, recognized at once a picture of the bird, remarking upon the little wings, and the white spot on the side of the head. He said the bird kept its great bill open very long and often, "as if it would never shut its bill again." This last is a curious point, for I have remarked that the Razorbill (the Great Auk's near relation) has a habit of sitting with its beak open. Donald M'Queen, who caught the last undoubted Scotch Great Auk in 1821, died in 1880, aged 73. A Great Auk is said to have been found dead near Lundy Island, in 1829. Full particulars of this occurrence, and of a tradition of this bird having formerly bred on the island, are to be found in Messrs. D'Urban and Mathew's "Birds of Devon."

Some other occurrences of the Great Auk off our coasts have been recorded; but it is doubtful if any of them are authentic. One is said to have been obtained on the long strand of Castle Freke, in the west of Co. Cork. Two are said to have been seen in Belfast Bay on the 23rd of September, 1845. One was seen off Fair Island, Orkney, in June, 1798, and two birds believed to have been Great Auks (although it is very unlikely that they were) were shot off Skye, in 1844.

Mr. J. E. Harting has recorded ("The Field," 1889) that there is in the Museum of the Jardin des Plantes, in Paris, a stuffed specimen and one egg, of a dirty white, marked with three or four dark blotches at the larger end, labelled "*Côtes d'Écosse.*"

Remains of the Great Auk have been found in Caithness, on Oronsay, one of the Southern Hebrides; at Whitburn Sands, Durham; and in the north and

south of Ireland. On Funk Island, off the coast of Newfoundland, vast quantities of remains of the Great Auk have been found. Bones have also been found in shell mounds on the coast of Maine and Massachusetts.

The accounts of the destruction of the Garefowl, or Penguin (by which name this bird was formerly widely known), furnish us with some idea of the former numerical strength of this species. From a letter written to Hakluyt, in 1578, it appears that the fishermen, who visited the banks of Newfoundland, depended greatly upon these birds as a source of food, or as the writer puts it, "victuall themselves always with these birdes." The Auks were salted down. In 1785, Cartwright, writing about the Funk Island, said that people brought the birds thence salted, and ate them in lieu of salted pork. He further stated that "the poor inhabitants of Fogo Island make voyages there to load with birds and eggs. Where the water is smooth they make their shallop fast to the shore, lay their gang-boards from the gunwale of the boat to the rocks, and then drive as many Penguins on board as she will hold, for the wings of these birds being remarkably short they cannot fly. But 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 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 Penguin, for this is now the only island they have left to breed upon."

The most famous haunts of the Garefowl in Europe were the skerries to the south-west of Cape Reykjanes, on the mainland of Iceland. Here the birds made their last stand. On one of these skerries, known (in common with two or three other rocks) as the Geirfuglasker (now submerged), situated about twenty-five miles from the mainland, great numbers of Garefowls were killed, in the last century, by expeditions which visited the rock to obtain eggs and birds. In 1813, the Governor of the Færoes sent the schooner *Farøe* to Iceland to get food. The crew visited the Geirfuglasker and killed many birds. When they reached Reykjavik they had twenty-four Garefowls on board, besides numbers that had been salted down. In 1830 this Geirfuglasker disappeared after a volcanic disturbance. Soon after this a colony of Garefowls appeared at Eldrey, a stack nearer the mainland and more accessible. Here they were harried for fourteen years, and it is believed about sixty birds were killed during that time. In 1844, the last pair were killed through the efforts of a special expedition, and these two birds are generally believed to have been the last of their race.

Not much was ever written about the habits of the Garefowl. Martin, who visited St. Kilda at the end of May, 1697, wrote:—"The sea-fowl are first the

Gairfowl, being the stateliest, as well as the largest sort, and above the size of a Solan-Goose; of a black colour, red about the eyes, a large white spot under each, a long broad bill. It stands stately, its whole body erected; its wings short, flies not at all; lays its eggs upon the bare rock, which if taken away she lays no more for that year. She is whole footed, and has the hatching spot upon her breast, *i.e.*, a bare spot from which the feathers have fallen off with the heat in hatching; its egg is twice as big as that of a Solan Goose, and is variously spotted black, green, and dark. It comes without regard to any wind, appears the first of May, and goes away about the middle of June." Pennant describes the egg as of a white colour, in some cases irregularly marked with purplish lines crossing each other, in others blotched with black and ferruginous about the thicker end. On the authority of Macaulay ("History of St. Kilda," 1764), he adds that the Great Auk did not visit the island annually, but sometimes kept away for several years together; it laid its egg close to the sea-mark, being incapable, by reason of the shortness of its wings, to mount higher. The Great Auk is believed to have made no nest, and to have deposited its one large egg on the rocks. The average measurements of an egg are, length about 4.9 inches, breadth about 2.9 or 3.00 inches. The eggs have the ground colour whitish or brownish-white, and have underlying grey markings and dark brown or blackish surface markings; the markings are very irregular in shape, usually most numerous about the larger end of the egg, and take the form of spots as well as streaks, lines and scrolls; some eggs are heavily marked, others only lightly. It is said that the Garefowls swam with their heads much lifted up, but their necks drawn in; they never tried to flap along the surface, but dived as soon as alarmed. On land they assumed a very upright appearance. They walked or ran with short steps, went straight like a man, and could go almost as fast as a man could walk; when pursued their little wings were somewhat extended as they ran. A few croaks were sometimes uttered by them. Dr. Fleming wrote of this bird, which came into his possession when he was on board the yacht *Regent*, in 1821. "When fed in confinement it holds up its head, expressing its anxiety by shaking its head and neck and uttering a gurgling noise. It dives and swims under water, even with a long cord attached to its foot, with incredible swiftness."

Mr. S. Grievés' latest summary of existing remains of the Garefowl is as follows:—skins 79 or 80; skeletons (more or less complete) 23 or 24; detached bones 850 or 861; physiological preparations 2 or 3; eggs 70 or 72. The skin of the Great Auk, now in the Edinburgh Museum, was sold just after being offered at Mr. J. C. Stevens' Auction Rooms, in April 1895, for £367 10s.; it is said to be a very fine specimen. Taking into consideration the

very limited number of eggs of the Great Auk known to be in existence, examples have changed hands rather frequently of late years. Most of these are disposed of by auction by Mr. J. C. Stevens, in his well known Auction Rooms in King Street, Covent Garden. Prices have increased enormously in the last half century. An egg, purchased from a dealer in Paris for 200 francs, realized 180 guineas in 1895. Yarrell's egg, which, at his death in 1856, only fetched £21 in Mr. Stevens' Rooms, was sold again in 1894 for 300 guineas. This is probably the highest price paid at a sale by public auction for one of these eggs.

The adult in summer dress had the head, hinder part of the neck, chin, throat, back, wings, and tail, black; between the beak and the eye an oval patch of white; secondaries tipped with white; front of the lower neck, breast, belly, and underparts generally, white; bill black, strong, arched, and compressed, and marked with several deep furrows and ridges; tarsi and feet black; iris dark brown. In winter the chin, throat, and front of the upper neck, became white. "Total length about 30 inches; beak 3 inches, 6 lines; wing 6 inches; tail 2 inches; tarsus 2 inches, 1 line" (Dresser, "Birds of Europe"). Pennant gives the length of this bird "to the end of its toes" as three feet; but birds are usually measured from the tip of the beak to the tip of the tail. He adds:—"The wings of this bird are so small as to be useless for flight: the length, from the tip of the longest quill-feather to the first joint, being only four inches and a quarter."

Fleming's description is worth quoting in full, as this fortunate naturalist saw the bird alive. "Length 3 feet; bill, dorsally, 3, in front of the nostrils $2\frac{1}{2}$, in the gape $4\frac{1}{2}$, depth $1\frac{5}{8}$ inches; 7 ridges in the upper and 11 in the lower mandible; legs black; irides chestnut; margin of the eyelid black. Inside of the mouth orange. Head, back and neck black, the latter with a brownish tinge. Quills dusky; secondaries tipped with white. Breast and belly white. In winter the brownish-black of the throat and foreneck is replaced by white, as I had an opportunity of observing in a living bird, brought from St. Kilda."

A young bird, preserved in the Natural History Museum at Newcastle-upon-Tyne, and figured by Mr. Symington Grieve in a most valuable paper, published in the "Transactions of the Edinburgh Field Naturalists' and Microscopical Society," appears to have the chin, throat and neck mottled with black and white; the upper neck and back slightly mottled; the oval spot in front of the eye well developed and conspicuous, although slightly mottled with dusky; the bill slighter than in the adult, nearly smooth, leaving only on the "upper mandible two furrows, posterior end; and under mandible, three furrows about middle."

The white spot between the bill and the eye is probably exactly analogous

to the white line between the eye and the base of the bill of the Razorbill. It is evident from the Newcastle specimen that it is present in the young, although not so clearly defined as in the adult in summer plumage. But from another figure given by Mr. Grieve, viz., that of a bird preserved at Prague, which is more or less in winter dress and, from the furrows on the beak, an older bird than that at Newcastle, but which does not exhibit any sign of the white spot in front of the eye, it appears that just as the white line is absent or almost absent from some adult Razorbills in winter dress, so the white spot in front of the Great Auk's bill may be absent from adult birds in that season's plumage.

Family—ALCIDÆ.

GUILLEMOT.

Uria troile, (LINN.)

THE Guillemot resorts to our coasts for breeding purposes, and during the rest of the year is found at a little distance out to sea. It may be said to pass the whole of its life, with the exception of a few weeks, on the sea, usually at some distance from the shore. During the few weeks over which the breeding season extends, the Guillemot is a rock-bird, an inhabitant solely of the sea-cliffs and stack rocks.

It breeds, in suitable localities, all round the coasts of Great Britain and Ireland; but far the more numerous in the west, and still more in the north, although there are some large and noted colonies on the north-east coast; on the southern coast of England, breeding colonies have become fewer and smaller within the last half century.

In the Shetland and Orkney Islands it breeds abundantly, and there are stations down the east coast of Scotland, notably a famous one on the Bass Rock,



AD. ♂ WINTER

GUILLEMOT

AD. ♂² SUMMER

in the Firth of Forth. On the north-east coast of England, there are well-known breeding places at the Farne Islands and on Flamborough Head; but the east coast lower down is unfavourable for the bird's requirements, and there is no good evidence that it ever bred in Norfolk cliffs. Formerly it resorted in numbers to Beachy Head, but in 1891 not more than two or three pairs remained. On the west coast of the Isle of Wight it breeds, although perhaps not so numerously as when "Rusticus" visited Freshwater in coaching days, and gave a picturesque account of the multitude of rock-birds in one of his "Letters." It nests in some numbers in Dorset, and on some of the cliffs on the south coast of Devon; while a few breed at Baggy Point, on the north coast, and immense numbers on Lundy Island. In the confines of Cornwall, the Scilly Islands are chiefly favoured. There are populous breeding stations on the Islands of Skomer, Skokholm, and the Eligoog Stacks, off Pembrokeshire, and other smaller ones on the mainland. Evidence that it breeds in Somerset is wanting. On the Welsh coast there is a small colony in Cardiganshire, and others in the north, while a good many resort to the Isle of Man; but the only colony on the north-west coast of England is at St. Bees. Further north it is numerous, numbers frequenting Skye and the Outer Hebrides.

The Rev. H. A. Macpherson thinks that there can be no doubt that a good many unpaired birds pass the summer in the Irish Channel, and this may be the case in other seas. From autumn to spring it is found commonly round the coast, usually keeping a little way out to sea. Numbers frequent the English Channel in winter, following the large shoals of sprats and other small fish (Booth). Although not much in evidence at this season they cannot, as Saxby remarks, be far distant, otherwise they would not so soon appear after a gale from seaward. After long continued bad weather and gales from the sea, numbers are washed ashore dead, and Guillemots are occasionally blown far inland in winter.

Part of the Guillemot's history—*i.e.*, its history during the winter months—is, as Professor A. Newton remarks, still little understood. He writes:—"but what becomes of the bulk of the birds, not merely the comparatively few thousands that are natives of Britain, but the hundreds of thousands, not to say millions, that are in summer denizens of more northern latitudes, no one can yet say. This mystery is not peculiar to the Guillemot, but is shared by all the *Alcidae* that inhabit the Atlantic Ocean" ("Dictionary of Birds").

Seebohm, who considered that the Guillemot was a circumpolar bird, varying in the shape of its bill in different parts of its range, states the range of the present bird, here treated as a distinct species, as follows:—It breeds in the Bay of Fundy, Nova Scotia, Labrador, Greenland, south of latitude 64°, Iceland, the

Færoes, Bear Island (reaching the latitude of 74°), and the north-west coasts of Europe, as far south as North France and as far east as the Varanger Fjord. ("History of British Birds"). There is a colony of Guillemots, about two thousand birds (Gätke), on Heligoland, and the known southern Atlantic range in the breeding season of this species has been extended by the observations of Mr. Tait, who found it breeding on the Berlengas Islands, off the coast of Portugal. Mr. Tait also saw Guillemots on the 4th June, 1882, in the neighbourhood of the Cies Islands, and thinks it is pretty certain that they breed on the rocky coast of Galicia ("Ibis," 1887, p. 399). In the Baltic it breeds on Bornholm ("Yarrell").

In winter it is occasionally seen in small numbers in the Straits of Gibraltar, after severe weather from the westward (Colonel Irby), but it is rare in the Mediterranean; on this side of the Atlantic it goes rather further south, and on the American coast as far as the Middle States. On the Pacific coast of North America our bird is replaced by *U. troile californica*.

The Guillemot resorts to rocky cliffs and headlands for breeding purposes; it is eminently gregarious in the breeding season (and, indeed, though naturally to a less degree, at all seasons), and some of its summer haunts are remarkable for the vast number of birds which congregate there for a few weeks in the year.

No nest is made, and the single large egg is laid on the bare rock, on a ledge in a cliff, or on the flat summit of a "stack." In some places, when the birds are numerous, the eggs are placed so close to one another that it is a matter for wonder how each bird manages to pick out and return to her own treasure.

The egg is pear-shaped and very large for the size of the bird. Seebohm, who collected the greater part of the large series in the British Museum, gives the length as from 3.5 to 3 inches, and the breadth as from 2.0 to 1.85 inches, and mentions an abnormally large egg measuring 3.7 by 2.2 inches. In colour they vary to a remarkable degree. The ground colour may be white, cream, buff, pale brown, reddish-brown, or green of various tints, from bluish to yellowish and olive, and of various shades. Eggs are sometimes almost or entirely unmarked, but usually they are marked more or less extensively, and in some cases the markings cover the greater part of the surface of the egg. The markings are in the form of spots, blotches, confluent blotches, sometimes forming a zone (nearly always near the largest diameter of the egg), streaks, scrolls, "scrawls," or a net-work of narrow lines. It is not the rule for an egg to be marked with spots *and* narrow lines or scrolls. The markings are usually most numerous near the largest diameter of the egg; occasionally they are most numerous at the other end, and they are often evenly or nearly evenly distributed over the whole surface. The markings are nearly black, blackish-brown, brown of various

shades, reddish-brown, almost red (rarely), or pale yellowish-brown. In addition to the markings on the surface, under-markings in the substance of the shell, frequently of a pale lavender-grey, are often to be seen, usually in eggs of which the ground colour is white or pale bluish-white.

One very beautiful variety has the ground colour of the shell white, or nearly white, and is closely mottled with under-markings of a lavender-grey and dark grey, and surface markings of various shades of reddish-brown, the markings being in the form of small irregular spots and curling lines, the whole producing the appearance of a piece of marble. Another beautiful variety is closely marked with deep brownish-red. But these handsome eggs—and especially the red ones—are far from common. Flamborough Head has a reputation for fine varieties.

The eggs of the Guillemot can always be distinguished (after they are “blown” at all events) from those of the Razorbill. If the egg has the ground colour green it belongs to the former; but if the egg has the ground colour white, cream coloured, or pale brownish-white, without any shade of blue or green, and is held up to the light so that the inner surface of the shell can be examined through the hole, this inner surface will appear green if the egg is a Razorbill’s, and yellowish-white if it is a Guillemot’s.

The Guillemot naturally only lays one egg in the season, but if this is taken another is laid; if the second egg is also taken, the bird, as a rule, does not lay again, but in some cases a third egg is deposited. Individual birds are believed to frequent the same ledges, and to lay eggs of a similar type and colour year after year.

Guillemots sit in a nearly upright position upon their eggs (sometimes, according to Saxby, they sit flat upon the egg), with the latter between their legs; they sit, when breeding on ledges in a cliff, facing the cliff, with their backs to the sea, but when apprehensive of danger face round in readiness for departure; Seebohm had often seen an old Guillemot pushing her egg from under her feet as he approached, previous to flying down to the sea; but when the birds are suddenly disturbed many eggs are knocked off the ledges, and they are sometimes blown off by violent winds.

Guillemots sometimes visit their breeding stations during the winter. At Flamborough I was informed that the birds visit the cliffs, flying round but not settling, from the end of November until after Christmas. About the end of February, the Guillemots and Razorbills begin to come into cliff and settle, but do not remain entirely until breeding begins, about the beginning of May. They depart from Flamborough in the first days of August, except a few which have young, and those go within the next few days.

Dunn, from observations in the Orkney and Shetland Islands, states that the young birds take to the water immediately after they leave the shell, and that he had repeatedly seen them in their downy state swimming in company with the old birds. Montagu, on the other hand, says that the young seldom leave the rocks until they can fly. Both statements are correct, as far as a portion of the young birds are concerned. I have myself seen young birds, partly grown, on the cliffs. I could see nothing in the way of food outwardly visible in the old birds bills as they came up to the ledges; but, on the other hand, fish may be seen hanging out of the Puffin's bills.

Taking the eggs of this bird is an important industry at some of the great breeding stations, notably so at Flamborough. So much so, that the visitor, in passing through the village on the way to the headland, may notice the "Sea Birds" Inn, which sports upon its sign-board coloured representations of Scout, Parrot and Auk (*i.e.*, Guillemot, Puffin and Razorbill). Climbing begins about the middle of May.

Few pleasanter experiences fall to the lot of the ornithologist than a visit to one of the large breeding places of this bird at the right season—Flamborough for instance.

In some places the birds are seen thickly clustered together or in long rows, while others are constantly coming up from the sea, or dropping off the ledges to gain the water below. From the groups you hear cries, loud or soft, of *murrrrrr*, or *arrrrrrr*, or *garrrrrr*, swelling every now and then into a loud chorus. The last variation, when loud, exactly resembles the angry or frightened scream of a deep voiced domestic cock. A bird rising from the sea to reach a ledge near at hand, but high up, has to circle round and approach the ledge gradually, as it cannot rise abruptly. Thus the flocks of birds seen flying in at evening approach the cliffs in an oblique direction. If a bird when attempting to settle on a ledge, fails in doing so (as it is very likely to do when the ledge is crowded, the other birds receiving the new comer open mouthed and pecking at it), it drops down some distance at once, and, flying out to sea again, makes two or three turns to regain its elevation before again attempting to settle. Sometimes, on a bird arriving on a crowded ledge, you hear cries like *ouk, ouk* breaking out, and every now and then a chorus of *arrrrrrrs* is heard, and sometimes a soft *murrrrrrr*. Guillemots are constantly nodding and bowing. They are clumsy birds on land, and waddle with difficulty; they rest on the tarsus as well as the webbed toes. Their flight is strong and fast, and the line of it direct, but they do not rise very readily from the water. I cannot say that I ever saw a Guillemot try to rise from level ground, but it is said that they cannot do so. From the top of

the cliffs the sea far below is seen to be dotted with birds, usually in little shoals, but to gain a nearer acquaintance with the latter it is necessary to get a boat and row along under the cliffs at a little distance from shore. The birds are wonderfully tame, allowing the boat to come within a few feet of them before they dive, making a slight splash with their feet as they go down. Numbers of birds are dotted about on the sea, but they are usually collected in shoals in loose order, some are diving for food, others placidly preening their feathers. Numbers of birds fly past, hurrying along on rapidly beating wings close to the surface of the water; their legs and feet are extended on each side, but are naturally not so conspicuous as the orange-red feet of the Puffins. When the boat gets under Bempton high cliffs the sight is very grand; rows upon rows of Guillemots can be seen lining the ledges, their dark backs turned to the sea contrasting with the nearly buff-white cliffs. A stream of birds passes constantly to and fro between the cliffs and the sea; but when we rowed rather close in and alarmed the birds (not too suddenly) the numbers that came flying out was astonishing. The Guillemot swims well, using its feet in the way usual with swimming birds; it is an excellent diver, obtaining its food in this way; but, strange to say, its feet are not used in diving, its wings alone being the propellers, the bird literally flying under the surface of the water, the legs being extended backwards; the wings also furnish the steering gear when the bird is beneath the surface. This was observed by Montagu in a captive bird. But Mr. Blackburn states that the Guillemot uses both wings and legs at once, flying, and swimming, and steering with its feet.

Young Guillemots are popularly said to be carried down to the water on their parent's backs. It seems probable that such young birds as are carried down are held between the old bird's legs, or perhaps between the bill and chin and the breast; but this is less likely. Gätke stated from fifty years of observation that the old birds on the water called the young, and the latter, anxiously trying to get near its mother, ended by slipping off the ledge and falling with a faint splash on the water.

The Guillemot feeds on small fish, crustaceans, marine insects and small mollusca. They go a long way from their breeding haunts to feed, Flamborough birds going as far as the coasts of Lincoln and Norfolk, and in the evening you can see a perfect stream of birds setting in at various points in the cliffs. The Welsh name for this bird was Gwilym. Other local names for it (some of which apply equally to the Razorbill) are Skout, Kiddaw, Sea-hen, Lary, Lavy, Murre, Tinkershire, Marrot, Strany, Scuttock, Murse, Lungy, Skiddaw, Shuttock, Kuggoy, Longie (Shetlands). The Norsk name is Lomvia.

The adult in breeding dress has the bill black, inside of bill yellow, of mouth flesh colour; iris dark brown; head and neck, all round, chocolate-brown, slightly darker on the top of the head, terminating on the lower neck in front in a rounded arch; rest of the upper parts and the wings blackish-brown; primaries with the inner part of the inner web light coloured, and the shafts of most of them light or whitish horn colour; secondaries tipped with white; neck below the brown breast, and under parts generally, white, streaked on the sides of the body and flanks with dusky, the feathers being parti-coloured; legs and feet blackish.

In winter the bill is horn colour, darker towards the tip. The chin, throat and front of the neck become white, as well as the sides of the face, but the feathers below the eye remain dark, and a dark patch behind and below the eye is prolonged backwards and downwards, in a line along the furrow or groove in the feathers, covering the orifice of the ear, and dividing a white or slightly mottled patch on the sides of the head (extending to sides of nape) from the white of the lower face and sides of the throat; a band, more or less dusky, across the throat appears very early in spring; the upper parts are rather darker and more slaty than in summer; legs and toes pale brown on the upper or inner sides (with a faint tinge of purple in some cases), joints and webs dusky; under- or out-side dusky; claws dark horn; the inside and upper-side of the tarsus and toes is sometimes yellowish-brown.

Young birds have the throat and the sides of the head mottled with dusky, and their bills are smaller and lighter coloured.

The summer dress is in some cases assumed very early in the year. Examples in this dress have been recorded as occurring in the latter part of December and in January.

The change to winter dress also occurs at an early date, and soon after the birds leave the rocks and go to sea. At this season they are said to be incapable of flight for a short time, from shedding many of their quill feathers at once.

The sexes are similar in plumage.

The total length varies somewhat, but is usually about 17.5 inches; wing 7.5 inches. I have weighed a Guillemot in winter which turned the scale at a fraction under 30 ounces, and another, in good condition, which weighed only 22.5 ounces. But the finest Guillemot I ever handled measured 18.60 inches in total length, and weighed 39.5 ounces. Its vigour was manifested by two partly black (party-coloured) feathers on different parts of its belly.

The culmen varies in length from 1.76 to 1.45 inches; the height of the bill at the angle of the under mandibles from .55 to .40 inch, and the thickness

at the nostril from .30 to .22 inch. Greater variations may have occurred to other observers.

The young in down is brownish-black above and dusky white below.

I have seen white varieties of the Guillemot in the Tromsø Museum and Mr. Whitaker's collection. Other examples, as well as pied and pale-coloured ones, have been recorded. Particulars of a variety with the bill and feet yellow may be found in the "Zoologist" for 1877, and "Birds from Moidart."

The bird known as the Ringed or Bridled Guillemot was formerly considered as a distinct species (*Uria lachrymans, vel ringvia*), and Dr. Sharpe, in his work on "British Birds," still treats it as such; but most ornithologists are now inclined to consider it merely a form of the Common Guillemot. It differs from the typical bird only in having the eye encircled by a white line, which is continued backwards and downwards from the hind corner of the eye, for a short distance, along the furrow in the feathers on the side of the head. This mark is found in young as well as in old birds. Intermediate forms are said to be found, but some ornithologists have stated that the difference between the two is always well marked. But one example showing intermediate conditions has undoubtedly occurred. This was shot by Mr. E. A. S. Elliot, and has one side of the head distinctly "bridled," while the other side is without any trace of this marking ("Birds of Devon"). Both forms always occur in company, but the Ringed form is always the rarer; the proportion of Ringed birds to those of the ordinary form varies at different breeding stations, and has been stated at one in ten or twelve at some, and at one in five at Flamborough by Seebohm. With the aid of a good glass the Ringed birds can easily be distinguished on the rocky ledges. Common and Ringed birds have been seen paired. Saxby, however, although he had obtained couples (male and female) of the Ringed form, never saw the two forms together except in flocks, and he asserted positively that each description of bird returned to breed in the same spot annually. He caused birds of each form to be kept in captivity; young birds were selected, and lived five years without the marks disappearing in the one case or appearing in the other. Gatcombe informed Mr. Howard Saunders that all the Ringed birds he had examined appeared to have the apertures of the eye, when measured with the compass, larger than in the ordinary bird.

Family—*ALCIDÆ*.

BRÜNNICH'S GUILLEMOT.

Uria bruennichi, (E. SABINE).

ALTHOUGH this northern species has figured in the British list for many years, its title to inclusion rested, until recently, upon slender and unsatisfactory evidence, the most important of which related to specimens believed to have been procured in Orkney and in Suffolk, and one found dead off the Irish coast. But during the severe weather which was experienced in January, 1895, when so many Little Auks perished on our eastern coast, three or four examples of the "thick-billed" Guillemot were obtained in this country, while an earlier specimen was procured in the same winter, in the previous December, when the weather was yet fair and open. The following particulars of these examples were communicated to the "Zoologist" (1895, pp. 70, 71 and 109) by Mr. J. E. Harting, Mr. Oxley Grabham, and the late Lord Lilford. The first, in order of date, was shot, on the 7th of December, 1894, in North Bay, Scarborough, and taken to Mr. W. J. Clarke, of that town, who forwarded it to Mr. Harting for inspection; and it was exhibited by the latter at a meeting of the Linnean Society on the 17th of January, 1895. It measured, in the flesh, 18 inches in total length, wing 8.25 inches. The beak was decidedly shorter and thicker than that of *U. troile*, and the white line on the edges of the upper mandible, running from the gape to the nostrils, very distinct; head, nape, and back, pure black, without any brownish tinge; tarsi and toes dirty orange; interdigital webs dirty brown. It proved to be a male.

About the 12th of January, a specimen was obtained at Guyhirne, on the Nene, in Cambridgeshire. It was received in the flesh by Mr. Travis, of Bury, and passed into the collection of the Rev. Julian Tuck. It was afterwards examined by Lord Lilford and Professor A. Newton.

On the 30th January, Mr. Grabham picked up another example (a male) on the sands at Filey. It measured 19.75 inches in total length; wing 8.25; the beak was longer than that of the Scarborough bird, but more angular and of greater depth. It was as black on the back and neck as that example, but had a



BRÜNNICH'S GUILLEMOT AD. ♀

few brownish feathers on the top of the head; tarsi and toes yellowish-olive. Mr. Grabham obtained from a man, who found them the same day, a Ringed Guillemot and another Brünnich's Guillemot, very like, but not so large as, his Filey specimen. It measured 18.75 inches; wing 7.75 inches; and had a very distinct white line on the edges of the upper mandible, beginning behind the nostrils, whereas in the Filey specimen it began in front. The tarsi and toes were yellowish-olive, webs dirty brown. In a P.S. to his note, Mr. Grabham wrote:—“Since last writing to you I have seen a Ringed Guillemot got here, the ordinary chocolate-brown colour—mine [mentioned above], as I told you, was pure black—with a very distinct white line on the edge of the upper mandible. Is there a ringed variety of the Brünnich's Guillemot? It was very far gone, and sadly knocked about, but I have managed to preserve the head and neck.” This is a very interesting observation, because if there is a ringed variety of Brünnich's Guillemot, the fact would make it certain that the so-called Ringed Guillemot is really only a variety and not a good species.

The light, bright-coloured feet of these birds is worthy of note; but it must be remembered that two of them might have been dead for some days when found, and that the colours of these parts change very soon after death. The huge size of one example is also noticeable, far exceeding the measurements given by authors. Continuing the subject in the “Zoologist” (p. 230), Mr. Grabham describes his ringed variety of this bird, as having the bill short and stout, and the white line most distinct. “The bird was very black on the upper parts, the white on the throat ran up to a point, and the tarsi and toes were of the Brünnich type.”

As a breeding species Brünnich's Guillemot goes very far north, and its further southward extension is probably confined to the east coast of British North America. It breeds in Northern Iceland, Jan Mayen Island, Spitsbergen, Franz Josef Land, Novaya Zemlya, and eastwards along some portion of the arctic shores of Asia, meeting with a form described as subspecifically distinct (*U. arva*). In Greenland it breeds (north of latitude 64°—H. Saunders) abundantly, and on the American Continent, in the North Atlantic, from the Gulf of St. Lawrence northward, and on the shores of the Polar seas. In the North Pacific the present form meets that already alluded to, which does not exhibit “the extreme of shortness and stoutness” in the bill, found in the Atlantic form, although it is unquestionably of the “thick-billed” species (Coues).

During the Arctic Expedition of 1875-6, Col. H. W. Feilden observed two individuals of this Guillemot as far north as Buchanan Strait (lat. 79°). He regarded the north water of Baffin Bay as the limit of its northern breeding range in that direction, and doubted if there are any breeding haunts of this species

north of Cape Alexander. Dr. Nansen shot an example, in June, 1895, to the north-east of Franz Josef Land, in lat. 82° 19' N.

Where the vast numbers of Brünnich's Guillemots, which are bred in the great "loomeries" of the far north, betake themselves to in the winter is a mystery. This species is not by any means a regular winter visitor even to the northern coasts of Norway, while the reported occurrences on the coast of Europe further south are very few; Mr. Howard Saunders mentions a specimen taken in France, near Havre, but, according to Gätke, it has never occurred at Heligoland, that mighty junction of the great system of migration-ways, where so many strayed birds put in an appearance. On the Atlantic coast of America its winter range extends to the Middle States. In Ontario it was almost unknown as a straggler, until the winter of 1893-4, when about fifty were captured on Lake Ontario. Others have been reported from Toronto, in December 1894 (about the time several birds visited this country), and I have a skin of a bird stated to have been procured there in December 1895. It would appear that this species wanders out of its usual winter quarters in certain seasons only.

In its habits this species resembles the Common Guillemot. Colonel Feilden, who with considerable trouble, managed to land at the vast "loomery" in the great cliffs at Sanderson's Hope (a thousand feet in height), and crawl to some of the ledges of red gneiss, along which the eggs were deposited, remarks:—"The eggs of Brünnich's Guillemot show quite as much variation in colour as those of *Alca troile*, and quite as beautiful ("Zoologist," 1878, p. 381). Mr. H. J. Pearson found a large colony breeding in Novaya Zemlya. He describes a series of eggs taken in Novaya Zemlya thus:—"The series show great variety in colour and size. In colour they closely resemble a selected collection of the Common Guillemot, and pass from pure white to the browns of the Razorbill, and every variety of yellow and blue-greens, some being very handsomely blotched with black."

Brünnich's Guillemot has a shorter bill than our bird, and the bill is proportionately (though often not actually, except at the extreme base, when the dilated cutting edges of the upper mandible increase the width considerably) higher and thicker or wider. The hinder part of the cutting edges of the upper mandible are considerably dilated, and in fully adult birds form conspicuous ribs of light bluish-grey. Bill, generally, blackish horn, gonys and tip somewhat paler and browner. Sides of the face below the eye, lores, chin, throat, sides of the neck and front of the upper part deep chocolate-brown. Rest of the upper parts black or brownish-black, darker than in the Common Guillemot, glossed, especially on the upper part of the head, back of the neck (the demarcation between this glossy black and the brown of the face and throat being often very clearly defined) with dark

greenish colour. Secondaries tipped with white; under parts (except as above) white; the white of the breast extending up on to the front of the neck and terminating in a point, more markedly in some examples than in others.

The colour of the legs and toes is described in "Yarrell" (4th Ed.) from a bird brought from Iceland, in summer dress, as yellowish-olive on the upper parts, dark brown below, membranes brownish-black. Feet, in a freshly killed ♀, winter, Jan Mayen, were said to be light brown. Bill black.

Dr. Coues describes this species as resembling *U. troile* in its changes of plumage. In winter the black of the upper parts is more slaty in hue; the lores and upper parts of face below the line of the eye, which remain dark, are blacker and less brown than in summer, though those parts retain their velvety character.

In length examples vary considerably; from 15.5 to 18 inches (and even 19.75, see above); the wing from 8.2 to 8.5. The culmen from 1.1 to 1.4 inches. The height and width of the bill, at the angle of the lower mandible, do not exceed those of large-billed Common Guillemots, viz: .55 and .30, but the upper mandible is wider at the base, and the bill is of course much wider in proportion to its length than that of *U. troile*.

In June, 1894, Colonel Feilden saw a pure white example within twenty yards off the ship's side, near Spitsbergen; and he procured a similar albino example of this species from West Greenland, which is now in the British Museum.

Family—*ALCIDÆ*.

BLACK GUILLEMOT.

Uria grylle, (LINN).

THIS strikingly coloured little diver is very abundant in the Shetland and Orkney Islands, and is found commonly in the Hebrides and down the west coast of Scotland. In Skye vast numbers breed at the Ascribs. It breeds in Caithness and Sutherland, but further south, on the east side, it does not seem to have been ascertained to do so in recent years, although supposed to breed on the coast of Kincardine and in other localities in former years. According to Pennant it bred formerly on the Bass Rock.

Montagu stated that the Black Guillemot frequented the Farne Islands; but Selby, writing in 1833, could assert that this had not been the case for five and twenty or thirty years past. Mr. Cordeaux has recently informed me that it probably breeds there again now, and that he has seen one or two in the water off Staples Island. The late E. T. Booth stated that he obtained a single specimen off these islands in May, 1867. Booth also (writing in 1876) said that a few bred, or rather did some years before, at Flamborough Head. When I was at Flamborough in July, 1896, our boatmen assured me that a Black Guillemot frequented the cliffs at that time, and Mr. Matthew Bailey confirmed the report. I was not, however, lucky enough to see the bird. In the following winter Mr. Cordeaux kindly wrote me word that Mr. Bailey seemed pretty certain that a pair nested in the cliffs, and a young bird got off. Pennant mentions seeing the Black Guillemot on the rocks off Llandudno, in Carnarvonshire, and in the appendix to his "British Zoology," says that they sometimes bred there. But at the present day none breed anywhere on the coast of Wales or on the mainland of North-west England. But on the Isle of Man it is still to be found in certain localities; in one in some numbers, in others sparingly ("Zoologist," 1896, p. 471).

With regard to South Wales, Montagu stated that he had seen it rarely near Tenby, and that a few bred annually on the coast there, but nowhere else that he could find from thence to St. David's. The Rev. Murray A. Mathew, however, informs me that he believes the Colonel made a mistake. When Mr. Mathew was in Pembrokeshire he questioned several old gentlemen whose experience went



AD. ♂ SUMMER

BLACK GUILLEMOT

AD. ♂ WINTER

back almost to the beginning of the century, who were naturalists and had collections of local birds, and they had never heard of a Pembrokeshire Black Guillemot; nor could he find a Pembrokeshire specimen in any collection in the county.

In Ireland, according to Mr. R. J. Ussher's valuable report, it breeds in Donegal, Antrim, Dublin, Wicklow, Waterford, Cork, Kerry, Clare, Galway and Mayo.

The Black Guillemot is only migratory to a certain extent, and for the most part does not wander far from its breeding haunts; nor does it keep so far out to sea in winter as the Common Guillemot. Saxby, who paid great attention to this species for years, stated that it was exceedingly common in the Shetlands at all seasons, but that the old birds, with few exceptions, withdrew themselves for the winter after the breeding season. He adds that the young do not migrate until their second autumn.

In winter it is a visitor, not infrequent in severe weather, to the coasts of Northumberland and Durham, but elsewhere the Black Guillemot is a scarce and unusual visitor to any part of the English or Welsh coast. In Lancashire and Lakeland it is of rare and casual occurrence, and not more than eight have been recorded from the Norfolk coast, and only one from Essex or Sussex.

Mr. J. H. Salter only refers to one example (in summer plumage) occurring on the coast of mid-Wales; and the Rev. Murray A. Mathew informs me that he has known of only two chance immature birds in the Bristol Channel, both of which were picked up dead. A few stray examples have been recorded from Hampshire, Dorset, Devon and Cornwall.

Our form of the Black Guillemot breeds in Iceland, the Færoes, Norway, Sweden, Denmark, in the Baltic and Gulf of Bothnia, and in the White Sea ("where it was found breeding by Henke at Onega"—Seebohm). On the Atlantic coast of America it is found from Maine northwards, including Newfoundland and perhaps Labrador, to Southern Greenland. It does not seem clear from Dr. Finsch's remarks (*vide* "Zoologist," 1890, p. 42), if this form is the one found on Jan Mayen Island.

In winter its southern wanderings do not extend far, but it is found on the shores of the North Sea and the English Channel, and on the American side as far as the Middle States. At Heligoland it has occurred once in breeding dress; young autumn birds occur frequently as early as August, and birds still more frequently in the winter months, especially on the advent of cold weather.

In Spitsbergen, Novaya Zemlya, Franz Josef Land, and the Arctic Seas generally, *Uria mandti* is found. This form is possibly circumpolar, having been

recorded from Hudson's Bay, Baffin Bay, the Taimar Peninsula, Bennett Island, and, in winter, in Bering Sea. Dr. Nansen saw a Black Guillemot in latitude $82^{\circ} 30'$ N. in May 1895, and in June the party in the *Fram* shot some between latitude 84° and 85° ("Farthest North").

During the Arctic Expedition of 1875-6, Colonel H. W. Feilden found the "Dovekie" breeding along the shores of Smith Sound at various places; but it did not, he thought, breed north of Cape Union. He saw two or three stragglers as far north as latitude $82^{\circ} 33'$ ("Ibis" 1877, p. 410).

The Black Guillemot makes no nest, but lays its eggs (two in number, although some authors have stated that three are often laid) in cliffs and fissures in cliffs, frequently at no great distance above the sea, or in holes under large rocks, and among loose masses of rock on beaches. Saxby found the eggs fifty or sixty yards inland, on grassy slopes strewn with rocks; and the birds have been known to utilize the crevices in an old stone wall. The eggs are sometimes deposited at a distance of three or four feet from the entrance of the hole.

The birds return to the same holes year after year, and both sexes take part in the incubation of the eggs. These are seldom laid, in the Shetlands, before the beginning of June, some eggs being dropped all through that month. The young are said to remain in the nesting place until they are fully, or almost fully, feathered. In shape the eggs resemble those of the Razorbill. They measure about 2.35 inches in length by about 1.6 inches in breadth.

The ground colour is usually either white or tinged with pale blue; more rarely it is tinged with pale yellowish or warm brown. The surface markings take the form of spots or blotches, largest and most numerous about the largest diameter of the egg, where they are sometimes confluent and form an irregular zone: their colour varies from umber and rich chocolate brown to nearly black; the underlying markings, which are very noticeable, are cold- and lavender-grey.

Hewitson never painted any more beautiful eggs than the three specimens of this species, which adorn Plate xxxvi of the first edition of his work.

Mr. P. Ralfe states that the low piping cry of this bird (described by Colonel Feilden as a "plaintive whine") is sometimes very constantly repeated, and he has heard it uttered by a little party of birds while on the wing. The Black Guillemot flies well and fast, in a direct line, somewhat like a Quail, its short wings are beaten rapidly, and when the bird is in summer dress the patch of white on the wings, contrasting with the black of the rest of the plumage, has a curious effect. They are very neat and pretty birds. When steaming up the fjords and along the coast of Norway, between Trondhjem and Hammerfest, in June, we frequently fell in with them, and they often passed close to the steamer;

when the bird has passed its bright red feet can be seen on each side of its tail, and if one swerves up, as they often do when passing at close quarters, the red legs and feet are very conspicuous. Booth remarked that this species, from the position of its nesting place, has need to use its legs with freedom, and can walk and even run with the greatest ease, and that it can rise from level ground with almost the rapidity of a Grouse. It can certainly rise rapidly from the water. The Black Guillemot feeds on fish, crustaceans and small shell-fish.

This bird is the "Tystie" of the Shetlands, a name of Scandinavian origin, the modern Norsk name being "Tejst." It is the Dovekie or Greenland Dove of arctic voyagers. Other old or local names are Sea Turtle, Scraber (Martin's Voyage to St. Kilda), Poist, Paiste and Paffinet. Pennant writes:—"The Welsh call this bird Casgan Longwr, or the sailor's hatred, from the notion that its appearance forbodes a storm."

The adult in breeding dress has the bill black; iris blackish-brown; the whole of the plumage black (glossed on the upper parts with greenish, bronze, or purplish-red), with the exception of the median and greater wing-coverts, the under wing-coverts (excepting again the edge of the wing) and a patch near the base of the inner web of some of the primaries, which are white; the (usually entirely) concealed bases of the white upper wing-coverts are black; tarsi and feet vermilion red; inside of the mouth the same, or rather more blood coloured.

In winter the upper part and sides of the face become white, but a dull black spot in front of the eye appears to be permanent; forehead, crown of the head and back of the neck finely mottled with black and white. The wings and tail remain the same as in summer, but the rest of the upper parts are barred and mottled in various degrees with black and white; the rump is nearly white and the white edges to the scapulars are broad; throat, fore-neck and underparts generally, white, with a few dark feathers on the sides of the body and flanks; bill less intensely black than in summer; inside of mouth coral-red, or light crimson; tarsi and feet vermilion-red; back of tarsus and underside of toes brownish and dusky; webs dusky vermilion; claws dark horn.

At the periods of change, the plumage has a curiously mottled black and white appearance. The sexes are alike. Total length about 14 inches; wing about 6 inches.

Young birds have the white wing-patch barred with brownish-black, the feathers having dark tips; sides of the head, throat, neck, and under parts generally, freckled in varying degrees with dusky, least so on the belly; upper parts black or dusky, the edges of the feathers white after the first autumn moult, but the rump has not so much white as in older birds. "Young at the end of

August. The eye is dark brown; bill blackish-grey; inside of mouth pale orange; tarsi and feet deep brown, the front of former, and upper surface of the latter, paler" (Saxby). The inside of the mouth, tarsi and feet get redder as the season goes on. The dark bars on the white wing-patch are worn for more than one year.

The nestling young is covered with sooty brown-black down.

Mr. Joseph Whitaker's noted collection of varieties of birds procured in Great Britain, comprises a very curious light coloured variety of this species, which has wings of a sandy colour; and the Rev. H. A. Macpherson shot a specimen in Skye which had sandy-coloured flight-feathers.

Family—ALCIDÆ.

LITTLE AUK.

Mergulus alle, (LINN).

THE Little Auk is an irregular winter visitor to our shores, occasionally occurring in large numbers. It is naturally more abundant about the northern islands, but is observed upon all parts of our coasts, both east and west, down to the Channel, and in Devon and Cornwall, where, according to the late E. H. Rodd, they arrive in little parties of ten or twelve, but soon get broken up. Bad weather drives the Little Auk in shore; and many instances are on record of its occurrence in the most inland parts of England. It is a rare and uncertain visitor to Ireland.

In the Shetlands it is found in some numbers a few miles out to sea, and a straggler now and then visits the bays and inlets, usually in fair weather only; while after gales numbers are sometimes washed ashore dead, and others driven inland, where they are often found strong and active. It remains about the



AD. ♂ WINTER

LITTLE AUK

AD. ♂ SUMMER

Shetlands late enough in spring to acquire the black on the front of the neck; and as late as the end of May, Saxby obtained examples about twenty miles north-east of Unst; these were in various states of plumage, for as this excellent observer remarks, it is irregular in its changes of plumage, the old birds changing first. Specimens in summer plumage have also been obtained in Norfolk.

In some winters the Little Auk is more than usually common on our coasts, and several memorable invasions have taken place. One of the latest, and perhaps one of the greatest, took place during the very severe weather which was experienced in January 1895; a great number of Little Auks perished on our and near our coasts in the bitter gales which prevailed in that month. Towards the close of the month numbers were seen passing south, in small flocks, down the east coast, and many were washed ashore in an exhausted condition. On the coast of Norfolk, Mr. Gurney records that, on the 21st, the poor half-starved little voyagers were seen in small flocks, flying a few yards above the sea, near enough to the beach for an observer to estimate that one flock contained a hundred. About two hundred and fifty were recorded from Redcar, and numbers from Scarborough; while in Norfolk, Mr. Gurney accounted for nearly three hundred, picked up or otherwise obtained. At the same time many Little Auks were blown far inland; five examples were picked up in various parts of Oxfordshire for instance, and it is highly probable that others were overlooked. A good many were recorded from the west of Scotland at the same time. Mr. J. E. Harting wrote of the Little Auks:—"They have indeed had a rough time of it, not only buffeted to death by wind and wave, or shot by the coast gunners, but seized upon in their helpless condition by the larger Gulls, and promptly devoured." He mentions crushed but entire examples found in the stomachs of Great Black-backed and Glaucous Gulls, and gives the weight of a Little Auk sent to him as 4.5 ounces ("Zoologist," 1895, p. 68). Mr. Gurney remarks that very few of the Little Auks procured in Norfolk were in full winter plumage, and that one from Cromer had the sides and lower part of the neck nearly black; and he quotes evidence to the effect that females preponderated in that invasion, while almost all the earlier ones sent to one taxidermist were females, and nearly all the later comers males ("Zoologist," 1896, p. 171). A small invasion of this species on the east coast was noticed in the early part of 1897.

The Little Auk inhabits the North Atlantic and the Greenland and Barents Seas, and breeds in the Arctic Regions. It breeds on Grimsey Island to the north-west of Iceland, Jan Mayen Island, Spitsbergen and Novaya Zemlya; on the shores of Greenland, north of the Arctic circle and as far up as Smith Sound, where Colonel Feilden observed it as far as 79° N. latitude; it breeds abundantly

in Franz Josef Land, but has not been observed much further east. In the other direction Baffin Bays appears to be limit of its westward range. Dr Nansen observed it to the north-east of Franz Josef Land, in lat. 82° N, in June (*vide* "Ibis," 1898, p. 272).

In some localities where open water exists during the winter it is practically a resident, but the greater part of the countless hosts of these little Arctic birds are dispersed, during winter, over the northern seas and ocean.

In winter a certain number wander southwards, on the American side as far as the Middle States or beyond, and in Europe it visits "the Færoes, the coast of Scandinavia, the North Sea, Germany, the Netherlands, France, the western side of the Iberian Peninsula, the Canaries and the Azores" ("Yarrell," 4th Ed.). It does not appear to have been noticed within the Straits of Gibraltar, nor does Professor Giglioli include it in his account of the avifauna of Italy. At Heligoland solitary examples are shot annually, and in some years pretty large numbers are obtained.

The Little Auk lays one egg under rocks, in the interior of heaps of broken rock, and in holes and in crevices in rocks or cliffs. It is pale green or bluish-green, occasionally marked with indistinct spots or lines of pale brown, and measures about 1·85 in length by about 1·25 in breadth.

On the island of Jan Mayen, where it is met with at a height of a few feet above sea-level as frequently as on the highest peaks of the mountains, it inhabits small cavities and crevices, but "the majority of the birds are obliged to put up with stone-heaps and loam or clay fields, depositing its eggs in holes at the depth often of a metre below the surface" ("Zoologist," 1890, p. 45). Eggs were found here deposited not only on the naked rock, but also on the ice remaining in the crevices. Millions of Little Auks, together with other birds, were found breeding by Mr. A. H. Cocks, on Rottge's Hill, a vast precipice, two thousand feet high, in Spitsbergen, but the breeding shelves were inaccessible to man ("Zoologist," 1882, p. 328).

Colonel H. W. Feilden, writing of the birds observed during the Arctic expedition of 1875-6, says that the north water of Baffin Bay is the summer home of countless numbers of these birds; but that they did not go far in any numbers up Smith Sound, the most northern point where he observed them being latitude 79°. He continues "I do not think that they breed to the north of Foulke Fiord; but the talus at the base of the cliffs that flank that inlet is occupied by myriads of them during the nesting season. On the 28th July, we found the young just hatched; they are in that stage covered with black down. From the large amount of bones and feathers lying around the huts of the Esquimo village of Etah, it is

evident that these birds contribute largely to the support of the Arctic Highlanders during summer" ("Ibis," 1877, p. 410). The birds crawl in among the rocks, winding far in through narrow places, and lay their single egg in safety from the numerous foxes ("Zoologist," 1878, p. 410).

The food of the Little Auk is believed to consist entirely or almost entirely of small crustaceans. Saxby states that in almost every specimen that came into his hands the stomach was quite empty, but that he had seldom seen the bird in poor condition.

Colonel Feilden gives the following interesting account of the food and habits of the Little Auk, as observed by him in the "north water" of Baffin Bay. "Myriads of Little Auks swarmed around us, busily employed fishing for *Entomostraca*, flocks of them diving just in time to avoid the ship's stem. These birds use their wings vigorously to propel themselves under water. It was observable that the individuals in a diving flock kept their relative distances and bearings under water with as much correctness as if on the wing, and all returned to the surface within a second of one another. During the breeding season the pouch-like enlargement of the cheeks gives them a singular appearance. The contents of the cheeks is a reddish coloured substance, which on close examination is found to consist of immense numbers of minute crustacea. The adaptation of the mouth in this species as a receptacle for the food required for their young, does not appear to have attracted much attention among naturalists; and yet a little consideration would have shown that some such arrangement must be required. With fish feeders, such as *Alca*, *Uria*, and *Fratercula*, no difficulty arises in transporting food to their young; but in the case of *Mergullus alle*, which I believe subsists entirely on minute crustacea, the bill is manifestly incapable of conveying the requisite amount of food, especially as very often the breeding places of the Little Auk are found inland at considerable distances from the sea" ("Zoologist," 1878, p. 383).

The noise made by these little birds, when collected in large numbers, is said to be heard at a great distance, and, being a highly pitched sound, to drown that of other birds.

The Norsk name is "Alke-Konge," and at Flamborough I have heard it called the Dwarf Auk. In Malmgren's list of the birds of Spitsbergen (appended by Wheelwright to his "Ten Years in Sweden") the local name is said to be "rot ges" from their peculiar cry of "rott-tet-tet-tet." It is the Rotche of Polar voyagers, and the Ice-bird of American fishermen.

The adult in summer has the bill black; iris dark brown; head, chin, throat and neck all round, back, wings and tail black, glossy on the upper parts; a small

white spot over the eye, and the scapulars edged with white, forming several distinct streaks; secondaries tipped with white; breast and under parts white; sides of the body, under the wings and flanks marked with black; under wing-coverts sooty grey, in some cases marked with white; legs and feet black. Total length 8·5 inches, wing 4·6. The sexes are similar.

In winter the chin, throat and neck in front become white, but there is almost always a dusky band apparent across the front of the neck, the bases of the feathers being dusky grey. A space below the eye remains black, and the ear-coverts are dusky, but the white extends on to the sides of the head, and in some cases meets in a narrow broken line across the nape. Front of the tarsus and upper surface of the toes brownish, webs and outer surface dusky. Young in the first winter have the front of the legs and toes dingy flesh colour, darker upon the joints (Saxby).

The young in down is dark sooty-brown. In its progress to the plumage of its first winter it appears to resemble the Razorbill.

An albino is in the British Museum.

Family--ALCIDÆ.

THE PUFFIN.

Fratercula arctica, (LINN).

THE Puffin resorts in great numbers to various parts of our coasts in the breeding season. It is abundant in the Shetland and Orkney Islands, as well as in the Hebrides, where myriads breed on St. Kilda and the Shiant Isles and immense numbers at the Ascribs, Skye. In other parts of Scotland it is abundant, and Ailsa Craig and the Bass Rock have been especially referred to as breeding stations. On the east coast of England it breeds only on the cliffs at



PUFFIN AD. ♂₁

Flamborough Head, and on the Farnes, where they have their head-quarters on North Wamses. In the English Channel it is not numerous, but breeds in the Isle of Wight, Dorset, Devon and more commonly on the Scilly Isles. About the mouth of the Bristol Channel its numbers increase enormously. It gives its name to Lundy Island, where countless hosts are to be seen, and some of the islands off the coast of Pembrokeshire (*e.g.* Skomer and Ramsey) are resorted to by thousands of Puffins. Writing of Pembrokeshire the Rev. Murray A. Mathew says he does not think he should exaggerate were he to say that the Puffins in number are in summer equal to all the other birds in the county added together. Colonies are to be found on other parts of the coast of Wales, though none breed in Cardigan, nor on the north-west coast of England, although some do so on the Isle of Man.

Immediately after the breeding season, in August, the Puffins leave the shore and go out to sea, and probably to some extent migrate southwards, those birds which are found on our coasts in winter being probably visitors from further north. It is indeed at that season not a common bird near any part of our coasts, and its presence in British waters is chiefly indicated by individuals washed ashore dead after stormy weather, or driven far inland. But dead birds washed ashore are far less numerous than the Razorbills and Guillemots found in the same condition. Those individuals which do occur on our coasts in winter are chiefly immature, and form only the smallest fraction of the countless hosts of Puffins which leave us in August. The latter must keep far to sea, but they have not been observed to go far south; perhaps they do both—but *where* they go to is a mystery. But curiously enough the Puffin has the inenviable reputation of being blown inland in autumn, or late autumn, chiefly, more frequently than any other species of the *Alcidae*, although since the great immigration of January 1895, the inland records of the Little Auk are perhaps more numerous. But it must be added that Puffins in their first year are sometimes reported as Little Auks. In Oxfordshire seven instances of the occurrence of the Puffin have come under my notice.

The Puffin inhabits the North Atlantic, and, outside the British Islands, breeds in the Færoes, Iceland, Greenland, Labrador, Newfoundland and southwards to the Bay of Fundy. It is found along the coast of Norway, chiefly in the north (but not in the Baltic), on the Channel Islands and parts of the coast of France, while Mr. H. Saunders, when passing in a steamer, saw large numbers of Puffins off the Berlengas Islands near the mouth of the Tagus early in June 1868; but Mr. W. C. Tait heard nothing of their breeding there during his visit (*Ibis* 1887, p. 400). A Puffin breeds on Jan Mayen Island, Spitsbergen and Novaya Zemlya, and in Greenland up to 64° N. lat. (*"Zool."* 1880, p. 211). Mr. H. Saunders states that it is met with up to lat. 70° N. But the birds breeding in North Greenland, Jan

Mayen, Spitsbergen and probably Novaya Zemlya, and the more arctic parts of the Puffins' range generally, belong to the larger stouter-billed *F. arctica glacialis*. In the North Pacific our bird is represented by *Fratercula corniculata* in which the appendage of the upper eyelid is produced into a long slender, acute, upright horn. The Atlantic species in winter goes as far south as Long Island on the American coast and in Europe down to the Mediterranean. It is found in the Straits of Gibraltar from November to March and is said to linger near Tangier as late as April and May. Gatkë states that the Puffin used to breed on Heligoland until the beginning of the "thirties," though its numbers were limited to one or two pairs. The breeding pairs were netted one year, and since that time none have bred there; but almost every spring several arrive with the Guillemots and a few are generally shot. It is otherwise unknown at the island, unless it be that a young autumn bird is killed once in a way at intervals of many years. Professor Giglioli, writing of this species on the coast of Italy, where it has occurred in every stage of plumage, mentions two caught as late as the 27th May, and says he should not be surprised to hear that the Puffin occasionally breeds in the Mediterranean. It has occurred at Syracuse and Palermo ("Ibis" 1881, p. 221).

The Puffin resorts alike to rocky cliffs, low grassy islands, and rocky islands, for breeding purposes. It breeds in colonies, which are often of vast size, and deposits its egg in holes and crevices in the rocks, in burrows excavated by itself in light soil, or in the unused burrows of rabbits, under big rocks or masses of broken rock and among the remains of ruined buildings, as for instance the crumbling masonry of the battlements on the Bass Rock (Booth). At Flamborough the Puffins delight especially in the shelves of bright green turf in the more broken parts of the cliffs; many breed about the "Saddle," a detached turf-topped rock, and numbers in the "Contorted" part of the cliffs, where the stone is softer and can be bored easily; there are many rabbits in the cliffs, which probably furnish some breeding sites. Mr. R. J. Ussher remarks that on the Saltees Puffins in accessible places lay far within their holes, but that in faces of clay cliffs their eggs can frequently be seen from without ("Zoologist" 1886, p. 891). On the little Skellig their eggs have been found on the bare rock ("Ibis" 1891, p. 7). Laying begins about the second week in May; in the Shetlands not until the third week. The single egg is sometimes deposited on the bare ground at the end of the hole, but sometimes there is a trifle in the way of a nest of herbage, or down, or feathers; on Jan Mayen Island nests have been described as formed of quills deposited in several layers in a circle and nearly covering the site. The egg is white with a dull, slightly rough surface, and is obscurely and

indistinctly marked with spots, large or small, and sometimes streaks, of light-brown and lavender-grey. The amount of the markings varies considerable, but they are chiefly underlying. Some eggs are much more richly marked than others, and some very handsome eggs have been described. Skomer Island has been mentioned as producing unusually fine eggs ("Birds of Pembrokeshire.")

The punctuality with which these birds arrive at, and leave, their breeding places, has frequently been remarked upon. Various days from the 1st to the 10th of April have been assigned as the date of their arrival at divers localities, while the departure seems to take place from early August (in South Wales) to the latter part of that month in the Shetlands.

However prettily the bright colouring of the Puffin may contrast with green turf, grey rocks and a blue sea, the aspect of the bird is intensely grotesque. The brilliantly coloured beak, large out of all proportion to the size of the bird, together with a certain air of stolidity and mock solemnity which the bird seems to wear, combine to produce a most comic appearance.

At their breeding stations Puffins are very tame, and allow a boat to approach them very closely before they bob under, to reappear at a short distance away. They fly rapidly and well, rising easily from the water and are much more at home in the air than are Guillemots, turning and wheeling with ease. They walk, and even run, readily, treading on the feet alone and not on the tarsi, nor do they always, when standing still, rest on the tarsi as well as the feet. The Puffin feeds chiefly on fish, but also eats water insects, crustaceans, etc. It feeds its young on fish, at first disgorged for its benefit, but afterwards on freshly caught fry which it carries up to the nest crosswise in its bill; several fish (Mr. Howard Saunders states that as many as eight) are carried up at a time. How the Puffin manages to retain fish number one while it catches number two, and so on, we do not know.

The Puffin is a very silent bird. In descriptions of breeding places where myriads of birds congregate we seldom find any mention of cries being heard. I could hear no cry from birds I watched at Flamborough. Seebohm says its note is a grating noise, usually uttered when the bird is taken in the hand, and varies from *o-r-r* to *a-r-r* as the bird is angry or pleased, and almost becomes a purr when the old bird is feeding the young.

None of our rock-birds have attracted more general attention than the Puffin. This is chiefly on account of the vast numbers that congregate at some of its breeding places. The Puffin gives a name to two islands, namely, Lundy, off the coast of Devon (from the Norsk name of the bird, *Lunde* and *ey*, an island. H. Saunders), and Priestholme off the coast of Anglesey, which is commonly called

Puffin Island. Mr. Howard Saunders writes of the swarms of birds going and coming round some of the islands in the Hebrides, making the horizon quite hazy. The Rev. Murray A. Mathew describing the great nesting stations of cliff birds on Lundy and Skomer Islands says that at some places it would seem as if there would not be room for another Puffin. "The water beneath the cliffs, almost as far from land as the eye can reach, is black with a multitude of the birds" ("Birds of Devon.")

At Flamborough the Puffin is called Parrot, and another very expressive name for it is Coulterneb. Other names for it are Willock, (which it shares with other birds) Lunda, Bowger, Mullet, Gulderhead, Bottlenose, Pope, Marrot, Bass-cock, Ailsa-cock, Tomnoddy, Cockandy, Tammy Norie.

The adult in summer has the iris pale grey. Eyelid orange-red; patches above and below eye bluish-grey; ridge (large) at the base of the upper mandible dull yellow; small ridge at the base of the lower mandible orange-red; space in front bluish-grey; fore part of the bill orange-red, with three ridges between the grey space and the ridge of the culmen and gonys, the hindmost, on upper mandible, partly yellow. Probably the bill is not fully developed for more than one year. Rosette of crinkled skin at the angle of the bill orange-yellow. Face and sides of the head and chin light smoke-grey, nearly white in some cases, an irregular sooty-grey patch near and below base of lower mandible; the outer lower edge of the grey face palest in colour. Forehead, crown, occiput, nape, back and sides of neck, collar round the throat, back, wings and tail black. The forehead, crown and occiput are shaded with grey; the collar in front inclines to sooty-brown; the primaries are browner than the rest of the wings and paler on the inner webs; a narrow light line crosses just above the nape. Thighs greyish-brown. Neck below the collar in front, breast, belly, under tail-coverts and sides of the body white, the last and the flanks marked with blackish. Tarsi and feet reddish-orange, claws dark horn colour. Length about 12 inches, wing 6 inches. The sexes are alike, with the exception that the bill of the female is rather less high at the base.

In winter the Puffin presents a rather different appearance, not because of any remarkable change in the colours of its plumage, but consequent upon certain portions of the bill and other ornaments of the head being shed or moulted or otherwise lost. The bill is then smaller and duller in colour.

The moult of the bill and palpebral appendages in the Puffin is the subject of a paper by Dr. Louis Bureau (Bull. Soc. Zool. de France, 1878). Mr. J. E. Harting in "The Zoologist" for 1878 gave a résumé of the paper (accompanied by a coloured plate) and translations of the more important portions of it. From

this it appears that the adult Puffin in spring has the beak elevated at the base, the lower mandible regularly curved from the base to the extremity. The beak is divided into two parts; one, the anterior portion remains unaffected by the moult; the other, the posterior undergoes the following changes. It is formed by the combination and suture of nine horny pieces which disunite and fall apart after the breeding season. The beak is then smaller, and much less deep at the base; the lower mandible forms, instead of a regular curve, a rounded obtuse angle the apex of which is at the division between the anterior and posterior portions of the beak. The posterior portion of the bill has lost some of its thickness. At the same time the thick puckered skin, forming a large rosette of an orange-yellow at the gape is reduced to a narrow band; while the wide thick border of orange-red round the eye has lost its colour, and the two horny flakes of bluish-grey, one above triangular and the other beneath elongated (horizontally) are wanting. In conclusion Mr. Harting writes that Dr. Bureau observes that:—"The adult bird . . . owes its summer dress to phenomena of three kinds—hypertrophy, formation of horn, and colouration; and loses it under the influence of three inverse phenomena, namely, atrophy, loss of horny substance, and loss of colour."

Dr. Sharpe states that the black shade on the face is present in all the specimens killed in winter, so far as the British Museum collection is concerned, even when the bill is developed to its full size. He adds:—"Whether this is a sign of immaturity, or whether it is also a mark of winter plumage in the adults, I am unable to say for certain" ("Handbook to the Birds of Great Britain").

In the young bird the bill is not so deep; the culmen is only slightly curved and does *not* rise abruptly, where it joins the forehead, for a short distance as in the adult in winter; there is only one slight ridge on the upper mandible; the angle of the gonys is shallow, much shallower than in the adult in winter, and the gonys between the angle and the tip of the bill forms a nearly straight line. The face and sides of the head and chin are dusky grey, and there is a patch of dull black in front of and partly round the eye. The collar is sooty-grey and hardly complete in front. "In some cases the dark face is still retained when the bird begins to breed in its third year" (H. Saunders).

The young in down is uniform blackish-brown (Seebohm).

The Rev. M. A. Mathew saw a Puffin at Skomer Island which had pure white wings. Selby mentions the occurrence of white varieties, and there is one in Mr. Marshall's collection. Others have been obtained at St. Kilda.

FAMILY COLYMBIDÆ.

THE Divers (*Colymbidæ*) consist of four species and one subspecies, confined to the northern parts of the northern hemisphere, and found in the New and Old Worlds. In these birds the feet are four-toed and palmate. The legs and feet are so placed and formed that the birds cannot stand or proceed in an upright position, but when on land are forced to shuffle along on their breasts. The large webbed feet, and narrow though strong tarsi, enable these birds to swim and dive extremely well. In the Divers the body is long and flattened, the wings short, sharply pointed and strong. The tail is short. The Divers are migratory and chiefly marine in their habits, but they resort to inland lakes in the breeding season. They make a rude nest close to the waters' edge and lay two (? or three) dark coloured eggs, spotted with blackish. The young are hatched covered with down. The sexes are alike in plumage, the young differ somewhat from the adults, and the seasonal changes of plumage are considerable.

Family—COLYMBIDÆ.

THE GREAT NORTHERN DIVER.

Colymbus glacialis, LINN.

THE Northern Diver is a regular visitor to our coasts. Like all the species of this genus it is thoroughly aquatic in its habits, and is rather more attached to salt water than the two other species commonly found in and about the British Islands. For a few months in the breeding season it resorts to the inland lakes, but lives during the rest of the year on the sea. During this season



GREAT NORTHERN DIVER ♂ ♀

the Imber Diver, Ember Goose, Immer or Cobble is found all round our coasts, but is more common on the western side, where adult birds are more frequently observed than in the more confined seas.

The greater abundance of this species on our western than our eastern coasts may be, partly at all events, accounted for by the fact that in the breeding season the Great Northern Diver is distinctly a western species. But the young birds of the year are said to come habitually closer in shore, and it is usually birds in this stage of plumage which are obtained on the east coasts of Britain.

In the Shetlands it arrives in September in considerable numbers, but a large proportion disappear about Christmas. In April and May they again become plentiful, but among the few which remain throughout the summer adults are rarely seen. In the Outer Hebrides it is commonly seen and frequently in summer; and in Skye also it lingers into spring. It occurs commonly on the west coast of Scotland, adult birds being observed in spring, and not unfrequently visits the large lakes of Cumberland and Westmoreland, especially Windermere and Ulleswater.

A few individuals appear every winter on the Lancashire coast, and specimens have been obtained from early autumn until late in April. It is also frequent in winter on parts of the Welsh coast, but it seldom seems to penetrate far up the Bristol Channel, and in Somersetshire is only an accidental and rare visitant to ponds and inland streams. Both on the north and south coasts of Devon it is of frequent occurrence in winter, and it has been observed a few times in summer, but while old birds in partial summer plumage are not uncommon, examples in full breeding plumage are very rare. The Great Northern Diver is found in more or less numbers every year on the Cornish coast, generally in immature plumage and during the autumn, but birds in full dress have occasionally been seen.

To the English Channel this Diver is a frequent winter visitor, from autumn to spring, adult birds being met with until quite the end of May. On the east coast it is much less common, and birds in adult breeding dress are very rare.

To Ireland the Northern Diver is a regular winter visitor, a few birds in adult plumage occasionally occurring quite late in spring.

There are many instances on record of the occurrence on inland waters in England of this large Diver, which has penetrated to Oxfordshire on more than one occasion.

It is possible that the Northern Diver may breed on some of the Outer Hebrides, and the Orkney and Shetland Islands, but no positive proof of the fact is at present forthcoming. With regard to the Shetlands, however, there appears to be substantial ground for the supposition that it has occasionally bred on the Island of Yell. Saxby twice obtained thence very large Diver's eggs, accompanied

in the second instance by an accurate description of the birds by the man who took the eggs, which quite convinced him that they were undoubtedly eggs of the Northern Diver. Soon after receiving the first egg, Saxby visited the locality from which it was said to have been obtained, and there saw a Northern Diver on the loch in perfect summer plumage. He describes the eggs as of a dark warm olive-brown, with a few scattered spots of umber-brown and dusky grey. In length they very closely agreed with Hewitson's figure, but two of them were about a line less in breadth. Eggs of the Red-throated Diver never approach these dimensions, and the Black-throated Diver, which sometimes lays eggs nearly as large as those of the Northern Diver, is almost, if not entirely, unknown in the Shetlands, even as an occasional visitor. Saxby also saw the birds in other parts of the island and during the breeding season, and chiefly in fresh-water lochs.

Since the above was written Mr. B. A. E. Buttress has recorded finding the eggs of this bird near Clouster, in the Shetlands. On a fair-sized loch the recorder saw, "on glassing it," a Diver swimming near the shore. Creeping nearer, he came to about seventy yards from the place, "when up got a couple of Great Northern Divers." Their "heavy and laboured flight" reminded the observer greatly of that of the Shag, but he had his glass on them, "so at once distinguished them before finding the eggs." These were about six feet from the water, and measured 3.80 by 2.15, and 3.55 by 2.15. The finder lay in wait for an hour, but the birds showed no signs of returning, and the next day he had to leave the neighbourhood. It is rather unfortunate that evidence is not forthcoming to connect the eggs found more closely with the birds seen; and that the latter could not be approached more closely before the couple got up. But even at seventy yards distance this must have been a wonderful sight! (*vide* "Zoologist," 1897, p. 509).

An adult bird in moult was shot, in the middle of August, 1884, near Dungloe, Donegal ("Zoologist," 1892, pp. 109, 192). On the 10th of June, 1883, one was seen swimming near the Lighthouse at Kyleakin, Ross-shire (Migration Report); and Dunn saw one in Hammer Voe, Shetland, on the 28th June, which had been there all the summer. No evidence is at present forthcoming that the Northern Diver has ever bred on the Scotch mainland. But on the 5th of June, 1868, Mr. Harvie-Brown watched a pair on a loch in Sutherlandshire; and the editor of the 4th edition of "Yarrell" remarks that few who read his account will have any doubt that the birds were breeding there. On July 19th, 1879, an adult bird flew past Mr. Howard Saunders' boat, in Sulem Voe, almost within gun-shot; and on the 28th, a few hours before he left Lerwick, he was assured, on good authority,

that a very young specimen had just been brought in alive by a small steamer which then served the northern islands.

The Great Northern Diver is a western species. It breeds in Iceland, but is only a visitor to the Færoes, and a sojourner from autumn to spring on the shores of Norway, although it is suspected that it may breed in that country. It is only an occasional visitor to the Baltic. The Austro-Hungarian expedition, in 1882, found it on Jan Mayen Island, and the recorder thought it might be correctly assumed to breed there ("Zoologist," 1890, p. 15); but Mr. H. Saunders thinks the bird found on this island, as well as in Novaya Zemlya and Arctic Russia, and observed off Spitsbergen, is probably *C. adamsi*. But the present species breeds in Greenland, and across North America, from the Northern States northward.

It migrates southward in winter as far as the Gulf of Mexico, and in Europe down to the Mediterranean, where, however, it is uncommon. It is occasionally seen in the Straits of Gibraltar in winter, but gets rarer further east; on the Italian coast, according to Professor Giglioli, it is the scarcest of the three Divers; but an adult female in full nuptial plumage, shot on the 19th June, 1878, near Spezia, is in the Florence Museum. It occurs occasionally at Heligoland in late autumn and winter, but rarely in breeding dress. This species seems to leave its breeding haunts quite early.

The food of this and the other species of Divers consist of fish. The dilatable nature of the gullet of these birds enables them to stretch a point with impunity when it is desirable to swallow an extra large fish; but it seems that *they* even sometimes overtax their powers. In the "Zoologist" for 1894 (p. 265), an instance is recorded of a Great Northern Diver being picked up dead, having been choked by a grey gurnard (*Trigla gurnardus*). In this case it was suggested that the long humeral and opercular spines, and the strong and rough dorsal fin-rays, caused the fatality. Montagu mentions that sprats, smelts, atherines and spotted gobies are eaten; and these birds have been known to swallow trout.

Saxby states that when diving this bird merely gives a slight start and disappears in an instant. When pursued or alarmed the Diver sinks its body very low in the water until only its head and neck are visible, and if hard pressed goes under altogether. The power possessed by Divers of sinking their lighter bodies in the relatively heavier water, and proceeding, either partly or entirely submerged, at a great pace, is difficult to explain.* The strength of this large Diver is enormous; a slightly wounded bird, made fast by a cord tied to one of

* This movement is distinct from the ordinary act of diving into the depths of the water, in search of food for instance, which is performed with the aid of the powerful webbed feet.—O.V.A.

its legs, has been known to tow a light boat for many minutes. A swift and powerful swimmer, it is very difficult to overtake in a boat, and can proceed even faster when beneath the surface. It rises from the water with difficulty, splashing along the water for some distance; but when once on the wing it flies straight and fast with rapidly beating wings, and neck and feet outstretched. Saxby states that it has been seen on the wing at all seasons, but, so far as he had observed, very rarely at any other than spring. He had seen it on the wing in November; in that month I saw a large grey Diver, apparently, from its large size, of this species, flying low over the sea against wind, parallel to the shore, on the coast of Norfolk.

In the breeding season the Northern Diver frequents inland fresh-water lakes, and prefers to nest upon an island. The nest is usually close to, or at no great distance from, the water, and the bird treads down or flattens with its body—for Divers appear to slide along the ground after the manner of a seal—a track from the nest to the water. In some cases a flattened nest of plants is formed, in others the eggs are deposited on the bare ground. The eggs are two in number. But it is mentioned in "Yarrell" that Audubon says that in North America three are more frequently deposited, and Mr. W. Raine states that occasionally three have been found in a nest. The eggs are dark brown, varying from an olive to a warmer tint or chocolate-brown, and sparingly spotted with dark, or blackish-brown, or black. They are narrow in proportion to their length, and measure about 3·60 inches in length and about 2·30 in breadth.

The Great Northern Divers cries have been described as loud and melancholy in tone. According to Saxby, its usual note bears considerable resemblance to the barking of a small dog; but upon a calm summer evening he has heard it utter a long-drawn plaintive cry, so strangely unlike any other known to him that he could not attempt to describe it. Mr. Dresser writes:—"At night, when camping on the shores of the lake, their weird wailing cry sounded clear and loud over the water; and though to us, who were used to it, the sound was by no means so disagreeable, I have known strangers, especially townsmen, who stayed in our camp for the fishing, to be kept awake most of the night by it; and one gentleman in particular used to compare it to a lot of demons let loose torturing children" (Birds of Europe").

The question of the ability or inability of Divers to assume the upright posture on land, in which they have sometimes been depicted, seems to be now settled; and it is stated that the formation of the legs and feet of these birds renders such a posture impossible. But Divers can sit nearly upright on the water to flap their wings.

The adult male in breeding dress has the bill black, the upper mandible arched. Head and neck black, glossed with purplish on the crown, with purplish-blue on the chin and on the lowest portion of the black neck, and with greenish on the rest. Across the upper throat in front a band formed of about a dozen short white lines, and on each side of the neck a row of about twenty longer white streaks, forming bands which nearly meet, and attain their greatest width at the back. Lowest part of the fore-neck, breast and belly white; sides of the lowest part of the neck and of the upper breast streaked black and white; sides of the body and the flanks black, marked with white. Across the region of the vent a dark line; under tail-coverts black, tipped with white; under wing-coverts and axillaries white; the larger coverts dusky down the centres; the axillaries with narrower and darker marks; wings and tail quills blackish; back and upper parts generally, black glossed with bluish (the feathers of the mantle and scapulars squarish at the ends), spotted with white; the spots on the middle of the back are square, those on and about the scapulars square and larger, those on the wing-coverts and rump quite small and round or oval; these spots are fewest on the lower part of the back above the rump, and absent from the tail-coverts. The black and white lines on the neck are corrugated to the eye and touch; the feathers forming them are curved, with raised stiff edges, the middle of the feathers black, the edges white. Tarsi and toes black, paler on the inside of the former and upper side of the latter. Total length from 30'00 to 36'00 inches; wing from 12'5 to 15'00 inches. The female is smaller than the male.

In winter the bill is light bluish horn colour, with the edges of the mandibles darker and the culmen dark brownish horn; irides warm brown, or reddish-brown; lores and sides of the face and head brownish, slightly mixed with white; crown, hind neck, back and upper parts generally, blackish-brown, slightly glossed with green, the feathers below the neck (except on the lowest part of the back and the rump) edged with grey; primaries and tail brownish-black, the former browner and paler on the inner webs, and the latter tipped with dirty white; chin, throat, sides of the lower part of the face, fore-neck, breast and belly white; lower throat, particularly on the sides, freckled with brown; sides of the neck and of the upper breast blackish-brown, with white margins to the feathers; sides of the body and flanks blackish-brown, mixed with white. Thighs and band across the region of the vent dusky; feathers of the lowest part of the belly marked with brown; tarsi and toes pale bluish-grey on the inner side and the upper or inner side of the closed foot, dark brown on the outer and lower side.

The ordinary winter dress of the fully adult bird does not seem to be satisfactorily determined. Seebohm stated that after the autumn moult a plumage was

assumed which could scarcely be distinguished from that of the Black-throated Diver at the same season; that is to say, the upper parts almost uniform blackish-brown; under parts, except the flanks, but including the sides of the face below the eye, white. But "Mr. Gatcombe once examined an adult Northern Diver in the middle of winter, the markings on the back and scapulars of which formed spots similar to those of summer, but were rather obscure and of an ash-grey instead of white, and not wavy like those of an immature bird, which fact leads him to suppose that it may be the true adult winter plumage of this species" ("Yarrell," 4th Ed.) From Professor Collett's observations on the plumage of *C. adamsi*, this view is probably a correct one.

Young birds have the feathers of the back with rounded or semi-pointed ends, and the face and throat minutely marked with brown. "Young in down are blackish-brown on the upper parts, paler brown on the under parts" (Seebohm).

The weight varies from 7 lbs. to 16 lbs.

Family—*COLYMBIDÆ*.

THE WHITE-BILLED NORTHERN DIVER.

Colymbus adamsi, G. R. GRAY.

THE White-billed Diver is known to have occurred in Great Britain on several occasions; one shot was at Pakefield, near Lowestoft, in 1852; another on Hickling Broad, in December, 1872; a third off the coast of Northumberland; a fourth in Suffolk, and another on Loch Fyne. The White-Billed Diver inhabits Arctic America, west of Hudson Bay, and its range extends across Siberia and probably across Arctic Russia. It has been observed in Novaya Zemlya, and is probably found on Jan Mayen Island and Spitsbergen. In winter it migrates southward, and it visits the coast of Norway annually.

The White-billed Diver is rather larger than the Northern Diver, and has a longer bill, which measures along the culmen from 3.50 to 3.75 inches. The culmen is straight, not curved, and the under mandible bent up suddenly to meet it, rather less than half way from the tip. In the adult the bill is yellowish-white, a little dusky at the very base of the lower mandible; in the young it is whitish, dusky at the base.

In summer the black of the chin, throat and forepart and sides of the neck is bluish, with a violet gloss, and that of the upper part of the head and the back of the neck greenish. In *C. glacialis* the gloss on the throat and neck (except the lowest portion) is green. The crown of the head is of much the same colour as that of *C. glacialis*. The white streaks of the throat collar number about half a dozen instead of a dozen; those of the patches on the sides of the neck, about ten instead of about twenty in *C. glacialis*. These patches or bands on the sides of the neck are broadest in the middle, whereas in *C. glacialis* they are broadest at the back of the neck; this character is a very striking one. The white spots on the scapulars are large and oblong, whereas in *C. glacialis* they are smaller and square. The lower part of the back is (in adults) usually quite unspotted. The spots on the rump are fewer than in *C. glacialis*. Professor Collett points out that the shafts of the wing feathers are light horn brown, except the tips which are brownish-black, while in *C. glacialis* the whole outer half of the shafts is brownish-black. And he adds that in this character of *C. adamsi* there is no difference between young and old birds; it is therefore of especial value, "being the only distinguishing feature present even in the young bird, and its investigation will determine in an instant to which species any individual specimen is to be referred" ("Ibis," 1894, p. 278).

Family—*COLYMBIDÆ*.

BLACK-THROATED DIVER

Colymbus arcticus, LINN.

THE Black-throated Diver breeds in many localities in the Highlands of Scotland, in Perthshire, Sutherland, Caithness, Inverness-shire, Ross-shire, and Argyll. It is not uncommon in the Outer Hebrides, and breeds on fresh-water lochs; to Skye it is only a scarce visitor, but has been known, according to the Rev. H. A. Macpherson, to breed on a loch in Soay. It has been observed in the Orkneys on some of the lochs in summer, but, in Saxby's time at all events, it was unknown in the Shetlands; recently, however, it has been stated to breed in those islands, but the record has not yet been satisfactorily substantiated. As a winter visitor to our coasts it is the rarest of the Divers, and on its southern wanderings it shows some taste for inland waters. To Lakeland it is a very rare visitor, and the same may be said of the Lancashire coast. It is not unknown in immature plumage on the Welsh coast, and has occurred in breeding dress on one occasion at least. It seldom ascends the Bristol Channel, and has only once been procured in Somerset. To Devonshire it is a casual visitor of rather rare occurrence from October to March, nearly always in immature dress, and on the Cornish coast its status is the same. In Dorset it appears almost every winter, but rarely in breeding plumage. It occasionally visits Hampshire in winter, and occurs off the Sussex coast, chiefly in immature dress, but it is the rarest of the three Divers there. Off Northumberland and Durham it is said to occur frequently in winter, but in Norfolk it is rarely met with on the coast; in the early months of the year a good many, chiefly immature birds, have occurred, but most of those procured have been on inland waters. It is somewhat rare on the Essex coast, but has occasionally occurred after storms in an exhausted condition far inland. It occasionally wanders, or is storm driven, to the more inland parts of England, but more rarely than either of the other Divers. To Ireland it is a rare visitor in winter, but it is seen also on its northward migration late in spring.

The Black-throated Diver is an almost circumpolar species. It breeds in Scotland, Scandinavia, Finland, Russia, and across Siberia to the Pacific. In the west, as far south as Pomerania and the Baltic Provinces; and in the east in



BLACK-THROATED DIVER ♀

Kamtchatka. It is not found in Iceland, Spitsbergen, or Greenland, but Mr. H. J. Pearson obtained it on Kolguev Island, and observed it on Novaya Zemlya, finding it breeding in Waigats and common on Dolgoi. It is common in Alaska and across the northern part of North America to Hudson Bay, but, according to Seebohm, is not known to breed further east than Melville Peninsula. American ornithologists distinguish as *C. arcticus pacificus*, the bird found in the north-west and on the Pacific coast, on account of its paler crown and nape, smaller size, and shorter, more slender and somewhat differently shaped bill; but examples intermediate in size have been procured, and Dr. Coues refers to specimens of both forms from Fraser's River. In winter the smaller bird passes down the Pacific coast in abundance as far as Southern California; but our bird has only occasionally been noticed in Ontario, and though it migrates as far as the Northern States it is not common there. European birds migrate in winter as far as the Mediterranean. It is occasionally seen in the Straits of Gibraltar in winter, and, according to Professor Giglioli ("Ibis," 1881), occurs on the Italian coast oftener than either of the other Divers. It is not uncommon at Heligoland in winter, but has only once been procured in summer dress. Mr. Howard Saunders records an example, preserved in the Museum at Neuchâtel, in full breeding plumage, and states that all three Divers are found on the Swiss lakes ("Ibis," 1891, p. 188).

Like the other Divers, this species passes a good deal of its life on the sea, but for breeding purposes it resorts to fresh-water lakes. But at other seasons also, during its southward wanderings, it is more partial to fresh-water than the other species, and has, taking into consideration its general rarity, been more often shot upon inland waters. In the breeding season it is partial to inland lakes furnished with islands, on which it breeds.

The nest has been described as a hollow in the ground (often in a grassy place), rarely with any lining, near the water's edge. But Seebohm mentions nests found on North Uist formed on bare shingle, half a yard from the loch edge, which were a foot in diameter and two or three inches high, substantially constructed with stalks and roots, and lined with fresh green grass and herbs. And Messrs. Seebohm and Harvie-Brown found a floating nest made of water-plants, and supported by others, on the edge of a pool, in a marsh on the Petchora.

The eggs are two in number; warm or olive-brown, slightly spotted, chiefly near the larger end, with dark brown or nearly black spots. They "vary in length from 3.5 to 2.9 inch, and in breadth from 2.2 to 1.9" (Seebohm). Larger specimens are liable to be mistaken for eggs of the Great Northern Diver.

According to a note sent by the late Richard Dunn to "Yarrell," the Black-throated Diver, in Scandinavia, makes its first appearance at its breeding haunts

in spring, with the breaking-up of the ice on the lakes. I noticed this in Arctic Norway, where I spent part of June on the little island of Tromsø. A pair of these Divers inhabited a small lake, on high ground, at the southern end of the island. When we first visited it on the 13th it was still chiefly frozen up, and covered with wet and frozen snow, while clean snow lay in drifts along the shores. The birch woods, with which it was nearly surrounded, were still much encumbered with snow drifts, and the trees at that date were only just bursting into leaf, or had their leaves half opened in sheltered places. Fieldfares, Bramblings, and Mealy Redpolls were nesting on the outskirts of the woods, where the Redwing's run of sweet whistling notes could sometimes be heard. But wintry as the scene was in many respects, the Divers were already in possession. The only open water was in the middle, where there was a low islet covered with yellow grass. On this bit of open water floated a Black-throated Diver in splendid plumage, a most strikingly handsome and conspicuous bird, the white marks on the shoulders appearing confluent at a distance. It swam with its body high out of the water, and its neck arched, occasionally dipping its beak beneath the surface—a well-known habit. I partly alarmed it by demonstrations, when it sank lower in the water, but soon came up again, and seemed well aware that there was no boat on the lake. Presently (how, we did not see) it was joined by another. This I have no doubt was the female, which had dived from the nest and not risen to the surface until she joined her mate. But summer advanced apace, and by the 18th the lake was transformed into a sheet of glassy water and the birch woods were beautifully green—a fresh delicate colour; all the ice and frozen snow were gone, and the snow on the shores was nearly all melted. There were then two islets in the lake about which Redshanks were calling and trilling, while two pairs of Red-necked Phalaropes, floating lightly on the water, swam rapidly about, snapping at the insects. We then made out the Diver lying on her nest at the very edge of one of the islets, in which position we saw her several times afterwards. One clear calm evening, when the short, beautiful Arctic summer had really come, the blue sky, dappled with white clouds, the snow-capped and snow-banded mountains, the birch trees, the shores, a wooden barn, and even the Diver on her nest (so close to the edge was this) were all perfectly reflected in the water.

Although this species prefers diving to flight as a means of escape, yet in the breeding season it is much on the wing and flies fast and straight. The late E. T. Booth relates that, when crossing the hills in the north of Scotland, he had noticed as many as eight or ten flying together, and that on such occasions they keep in a straight line, at regular intervals, one behind the other.

Like its congeners this species is a fish-eater, and it has been convicted of

eating salmon fry on northern rivers. A bird killed in January is stated to have contained eight herrings, from three to five or six inches long.

Its skin is used by the natives of Alaska, and other northern countries, for clothing, as also is that of the Northern Diver. In the furriers shops in Norway I have seen quantities of "trimmings," made from the pretty grey and black and white neck skins of the present species.

The adult male in summer has the bill black; iris red; crown, nape and back of the neck clear slaty-grey; forehead and face before the eyes more dusky; lower face, behind and below the eyes, still more so, shading into the black of the chin, throat and fore-part of the neck, the two latter glossed with purple-blue. The black ends abruptly in a nearly straight line on the sides and in a point on the front of the neck. Across the throat a crescent of short white lines. Sides of the neck streaked with black and white—the white lines raised, the feathers being black edged with white, and curiously curved up at the edges. Sides of lower neck and breast streaked with black and white in about equal proportions; under parts and wing lining white; a dusky band across lowest part of the belly; under tail-coverts black and white; sides of the body and flanks black. Back, wings and tail black, glossy on the back. On the shoulders (inter-scapulars) two patches of rows of squarish white spots (formed by a white spot near the end of both webs of the feathers.) A broader patch (with larger spots), on each side, on the scapulars. Wing-coverts marked with white spots. Tarsi and feet blackish-brown outside, paler inside. Length about 26 inches; wing 11.5. Female rather smaller.

In winter the bill is a light horn colour, edges of the mandibles dusky, and culmen brownish-horn. Forehead, crown and hind neck greyish. Lores and sides of the crown brownish. Back, wing-coverts and rump blackish-brown, with a slight greenish gloss, and lighter grey edges to the feathers, which are broadest and most conspicuous on those parts where the rows of white spots appear in summer. Primaries brownish-black; tail dark brown, narrowly tipped with dirty white; chin, throat, sides of the face, fore-neck, breast and belly white, with some slight freckling of light greyish-brown on the face, throat and fore-neck; sides of body blackish-brown, mixed with a little white; flanks brown and white; axillaries and under wing-coverts (save the outer ones, which have dusky centres) white; sides of the lower neck and upper breast streaked with greyish-brown; thighs and band across the vent dark brown; under tail-coverts brown and white; tarsi and feet pale on the inner and upper surfaces, dusky on the outer and lower.

The immature bird has the face, throat and fore-neck freckled with minute markings of a light greenish-brown. The young in down are blackish-brown above and greyish-brown beneath (Seebohm).

Family—*COLYMBIDÆ*.

RED-THROATED DIVER.

Colymbus septentrionalis, LINN.

THE Red-throated Diver breeds commonly in the Shetlands, Orkneys, and the Outer Hebrides, but is only a spring and autumn visitor to Skye, where, however, it has been known to breed. It breeds also in the north and the west of Scotland as far south as Argyll. In Ireland, to which country it is a regular winter visitor, often found late in spring, it has been found breeding in one district in Donegal, but, according to Mr. Ussher, the persistent taking of its eggs must soon drive it from this haunt, if that has not already been done.

In autumn this bird migrates southward, and in winter is found commonly all round our coasts and about the larger estuaries and harbours, while it has often been observed late in spring. It is numerous in the Channel and about the estuary of the Thames, and from its habit of following the shoals of sprats and herrings is known as the Sprat Loon, a name by which it was known in the Thames in Pennant's day. They occasionally wander up rivers, and have been found on fresh-water lakes and pools; as a straggler they occur in the inland parts of the country. They usually keep at a little distance from the land, but the late E. H. Rodd used occasionally to observe them fishing close in shore, near enough to enable him to watch their graceful and wonderful movements in the water. The red throat is, in the adults, lost very late in the autumn, and probably for a short time only in some cases. Specimens with this mark developed have often occurred even on our southern coasts. As late as the 28th of November I saw a bird off the shore at Cromer, which, as seen through the glass, had a rather dark brown throat still showing.

The Red-throated Diver is a circumpolar species, breeding in the far north of both hemispheres, and in Europe as far south as Scotland. It breeds in the Færoes, Iceland, Spitsbergen, Novaya Zemlya, Greenland, Scandinavia, and across Northern Europe, Siberia, and the far north of America, breeding in very high latitudes. It has been observed in summer on Jan Mayen Island, and has been shot on some of the islands of Franz Josef Land. Its southward migrations extend nearly to the south of the United States in winter, also to Japan, and in



WINTER

RED-THROATED DIVER $\frac{1}{3}$ SUMMER

Europe down to the Mediterranean. It is common in winter in the Straits of Gibraltar, and occurs in some numbers further east, as far as the delta of the Nile, wintering in considerable numbers in the basins of the Black and Caspian Seas (Seebohm). It is of very common occurrence at Heligoland, both on the spring migration and again in August; also in late autumn. These Divers make their appearance in some numbers off the coast of Norfolk early in the autumn. During a few hours in the forenoon of the 24th September, when about a mile off shore, I noticed some half dozen travelling singly eastward, parallel to the north coast, and perhaps following the coast on their southward migration. In October, 1880, Divers were observed by the Messrs. Power going south-east in a constant stream for nearly four hours, a quarter of a mile from the shore, on the north coast of Norfolk (Messrs. Gurney and Southwell's "List of Norfolk Birds").

The Red-throated Diver resorts to fresh-water lakes for breeding purposes, and is said to prefer the shores of small pieces of water to islands in a larger loch, and also to prefer low islands, or shores, near the sea-coast, to the more inland lakes. Booth wrote that this species appeared to be more plentiful, in Scotland, where the country was flat, with small marshy pieces of water, than in hill lochs, the true home of the Black-throated Diver. It was consequently most numerous among the "floe" which abounded in the central part of Caithness. In the Shetlands, where the nest is sometimes found on holms and small islands, it is much oftener placed by the side of a little pool in the hills.

The nest sometimes consists of a collection of grass, rushes, or other easily available materials; at other times the eggs are laid on the turf, among stones, or in a slight depression in the ground, with or without something in the way of lining. Dunn states that the eggs are laid so close to the water's edge, that the sitting bird can touch the water with her bill.

The eggs are two in number, and are subject to considerable variation in size and colour. They measure about 2·8 inches in length by about 1·8 in breadth. Saxby remarks, concerning Diver's eggs especially, that the breadth of an egg is far less liable to variation than its length. Of the colours of the eggs of this species, he states that the spots are few, scattered, occasionally of large size, and of two colours—deep brown and brownish-grey; and that the ground colour may be reddish-brown, olive-brown, or green of almost any shade (he had seen it almost as light as that of the Wild Duck's egg), the rarest variety being of a pale, warm, yellowish clay colour.

The food of the Red-throated Diver consists chiefly of fish and small crustaceans; and Rodd states that the large size of the fish which it can swallow whole is simply astonishing. It can take in a considerable quantity of fish too,

and a wounded bird on one occasion is said to have disgorged no less than sixteen young herrings.

Montagu had a good opportunity of observing and comparing the rate at which this bird can swim, both on the surface and under the water, on one occasion when he succeeded in approaching, unobserved, an example fishing in a canal. The bird did not attempt to fly, and, by walking and running after it, Montagu was able to compute the speed of the bird, when swimming on the surface at about four and a half miles an hour, and beneath the surface at between six and seven. The usual distance between the place of immersion and emersion appeared to be about eighty or ninety yards.

In spring and during the breeding season these birds are very noisy, uttering dismal and unearthly sounds. The note has been described as *kakera*, or *ak, ak*. In the Tromsø Fjord one morning, a pair were making a most unearthly noise, which I could only compare at the time to a mixture between the cackle of a guinea-fowl and the bray of an ass. These cries, often noticed immediately before bad weather, have earned for the bird the name of Rain Goose in the Orkney and Shetland Islands, and elsewhere in the North. Saxby writes:—"It is, however, chiefly *during* rain that it delights to circle irregularly and at a considerable height, uttering its peculiar note." Other provincial names are Sprat Loon, Cobble, Little Naak, and Wabble (young birds on the Exe). In winter dress it is the Speckled Diver of Montagu.

This Diver, when pursued, has been distinctly observed flying under water, not merely paddling with its wings, as it sometimes does when feeding. I remember one November day making an unsuccessful attempt on the life of a Diver on the Norfolk coast. The sea was rather rough when we put out in a crab boat to try and drift down within shot of the bird, a manœuvre which is sometimes successful. But when we got out we could see nothing of the bird, and after rowing and drifting about for some time, came on shore again. Yet in a very short time the Diver appeared about the same place where it was first observed, having doubtless, aided by the broken water, kept out of sight while we were cruising about, by sinking its body low in the water. On the only occasion on which I have had an opportunity of observing one diving at close quarters, the bird, as far as I could see, made considerable use of its wings. But this individual was making shallow dives in shallow water close in shore, in the sound which separates Tromsø Island from the mainland, and was facing the tide which was running with great force. An adult Red-throated Diver, caught alive in an exhausted state one December morning in Oxfordshire, was shown to me a few hours after. It took a sprat out of a basin of water, taking the fish crosswise in its beak, but

dropped it; it afterwards swallowed two when in the seclusion of its basket.

The adult male in summer has the bill (which appears to be slightly recurved, owing to the nearly straight upper mandible and the long upward curve of the lower) lead colour or blackish; iris red; forehead, face, sides of head, chin, upper part of the throat and sides of upper neck slate-grey (ashy-grey in younger birds). Top of the head, with centres of feathers, blackish-brown; nape and hind neck black-brown, with slight green reflections, marked with narrow white lines, caused by white feather edgings; as these feathers are not flat, but curved up at the edges, the white lines are curiously raised. Back and sides of lower neck dark brown, spotted with white. All the upper parts below this dark or blackish-brown, with a slight green gloss; in some cases some of the white spots of winter remain, chiefly on the wing-coverts. Primaries blackish-brown, inner webs rather paler; tail blackish-brown. A large elongated triangular patch of reddish-chestnut extends from a point on the throat nearly to the upper breast. Lowest part of the neck below the chestnut white, in some cases marked with brown, probably a sign of youth. Breast and belly white, with a few brown marks on the sides of the upper part of the former; sides of the body and flanks heavily marked with dark brown. Under tail-coverts chiefly dark brown. An undated skin, examined by me, has some of the primaries edged near the tips with yellowish-white; this bird is in worn summer dress, and shows some signs of immaturity. Length 24 or 25 inches; wing 11.00 to 11.5. Larger as well as smaller measurements have been stated. Weights of 3 lbs., 4 lbs. and 4.75 lbs. are recorded. The female is rather smaller. Tarsi and feet blackish.

The adult in winter has the bill pale bluish-horn colour, darker on ridge of culmen; iris indian-red; top and upper sides of the head, nape and back of the neck grey, mottled finely with blackish and white; the markings on the neck in the form of narrow lines. Mantle, back, rump, tail- and wing-coverts dark grey, marked with small white spots or short narrow lines. The white markings on these parts are most conspicuous immediately after the moult, and gradually diminish. Primaries and tail dusky grey, latter tipped with white. Chin, throat, front and sides of the neck and face, extending to the lores and a narrow line to the nostril, white. Under tail-coverts chiefly white; a line of dusky feathers across the lowest part of the belly. Inside of tarsus and the toes pale bluish-horn colour, the outer side dusky.

In young birds the feathers of the back and wing-coverts are edged with white; this edging being lost first at the tip of the feathers, the markings remain as diagonal lines. The sides of the head and the throat are tinged with ash-grey. Young in down brownish-black above, greyish-brown beneath (Seebohm). An

albino variety is in Mr. Marshall's collection, and an example pure white (including the legs and bill), except a few dark feathers on the back, shot in Essex, is mentioned in Mr. Miller Christy's work on the birds of that county.

FAMILY PODICIPEDIDÆ.

THE Grebes (Podicipedidæ) of which about twenty-five species are described, are almost cosmopolitan in their distribution, though they do not go very far towards the poles, and appear to range only as far as sub-tropical regions in the other direction. The Grebes have their bodies thickly covered with peculiarly soft and silky feathers. Their tarsi are narrow and knife-edged; the feet (four-toed) are not webbed, but the toes are flattened out and widened with broad lobes; this is the most remarkable feature in their external structure. In these birds the tail is virtually absent, and the body short and flattened laterally; the wings are short.

The sexes are practically alike in plumage, but the seasonal changes of plumage are very great, the most remarkable part of which consist in the assumption of ornaments (ruffs and frills) on the head, by most of the species, in the breeding season.

Grebes are migratory for the most part. They breed on fresh water lakes and rivers, and to some extent are marine in their habits during winter.

The nest is bulky and close to or floating on the water, and the eggs are nearly white, unmarked, usually coated with chalky substance, and vary in number from three or four up to six or eight in number. The young are hatched, covered with down, and are able to take to the water almost at once.



GREAT CRESTED GREBE ♀ ♂

Family—*PODICIPEDIDÆ*.

GREAT CRESTED GREBE.

Podiceps cristatus, (LINN).

THE Great Crested Grebe is a local and partial resident, breeding on the broads, meres, lakes and other large sheets of water in various parts of the country. Formerly this bird was in considerable danger of being exterminated by collectors who were in the habit of supplying Grebe skins to the dealers in plumes, "Grebe" being at one time very fashionable for ladies muffs and trimmings. Indeed the naturalists of fifty years ago seem to have contemplated the disappearance of this very ornamental species from our inland waters with a mournful resignation.

At the present day this species resorts, in the breeding season, to the broads of East Anglia, and the meres and lakes of Yorkshire, Cheshire, Staffordshire, Lancashire and Brecon among other localities; also the extensive reservoirs of Hertfordshire, and has been known to breed on ornamental water and reservoirs in Rutland and Nottinghamshire, Derbyshire and Leicestershire. In its old haunts, the Shropshire meres, I have met with it in May, and it has bred for some years to my knowledge, on various reservoirs in Warwickshire, Oxfordshire and Northamptonshire. I have seen as many as a dozen pairs of adult birds on a reservoir of about seventy acres in extent. In Scotland it has been recorded as breeding in the south, and as present in the breeding season on lochs in the east; while Selby's somewhat vague statement, made sixty years ago, to the effect that this species bred on a few of the northern Scottish lakes, has received supporting evidence from modern investigators ("Zoologist," 1889, p. 352, 386). In Ireland, Mr. R. J. Ussher records that it breeds on lakes, large and small, in Antrim, Down, Armagh, Monaghan, Fermanagh, Cavan, Longford, Westmeath, Louth, King's and Queen's Counties, Clare, Roscommon, Sligo and Leitrim; also, doubtfully, in Galway and Tipperary.

The Great Crested Grebe is "Resident in all parts of the Old World, including New Zealand, except in the Arctic Regions and the Tropics. Summer visitor only where the winters are severe" (Seebohm). It does not occur in Iceland or Greenland; is only an uncertain breeder in any part of Norway; but

breeds in the southern part of Sweden, and in Denmark and South Finland, Russia, Germany, and in places adapted to its requirements, down to and on both sides of the Mediterranean. It is only rarely met with on Heligoland.

Even in the mildest seasons these Grebes do not pass the winter upon their inland breeding haunts in England. In those localities with which I am acquainted they usually take their departure before October is out; but in one year I saw three Grebes there on the 18th November, and in the mild season of 1891 two were present as late as the 8th December; both these were, I believe, young birds of the year, one certainly was so, as indications of the longitudinal lines on the upper part of the neck were visible. It is probable that some adult birds make their way to the coast at an earlier date than this. On the 6th September, 1890, I saw an adult example, still retaining some portions of its summer dress, on the sea, off a pebble beach, on the north coast of Norfolk, and on the 12th October, 1887, another in a harbour in the same district.

During autumn and winter this species is not uncommonly found on many parts of our coasts, but has a tendency to move southwards in the depth of winter, especially if the season should prove a severe one. In Cornwall it is said to be not very uncommon in winter, especially on the marsh pools in the Land's End district. On Devon waters too, it is recorded to be far from rare at that season. On the Dorset coast Mr. Mansel-Pleydell states that it is not uncommon in Portland Roads and at Weymouth; "flocks," of more than twenty together, have been seen off the Poole coast in November 1882. He adds that "after Christmas they apparently go further south, as they are not so numerous then." At the same time, individuals are not very uncommonly met with during winter on our rivers and inland waters away from the usual breeding haunts, and I have known examples shot in Oxfordshire, on the Thames, in December and January, and on the swampy Otmoor in the latter month. It is not recorded from the Hebrides or the Orkneys, but Saxby met with it once in the Shetlands. In the Lake District it is quite scarce even as a winter visitor. Indeed on our western coasts generally, it is uncommon; only four occurrences in Somerset are recorded, and it is very seldom obtained upon the coast of mid-Wales.

The return of the Grebes to their breeding haunts in spring depends in some measure upon the state of the weather. I have known them put in an appearance in Oxfordshire as early as the 12th February; but in 1886 they were delayed on the same water by the severe frost until the 28th March, the ice having broken up only a week before. Some birds pass on. It is possible that these passing visitors may be birds of the previous year, which would not breed until the following season. On the 28th April one year I saw two Grebes on an Oxfordshire

reservoir, which had but slight crests and no facial ruffs, heads and backs dusky, neck and under parts of a less pure white than in the adults. They did not remain, and this is the only occasion on which I have known birds in this plumage to appear in spring on that water, those which arrive to breed there being invariably in the nuptial plumage, although their bright colours and ornaments are not always fully developed when their arrival takes place at an early date.

If they are not actually paired on their arrival at their breeding haunts, pairing takes place almost immediately after their arrival, and in any case a considerable amount of courtship may be observed as spring comes on, and all through the early part of the season the male pays his partner a great deal of attention. Bowing and nodding, and alternately raising his long neck and lowering it until his head rests on his back, the male swims round his mate, then draws quietly alongside her, when some approach to billing may occasionally be observed. On the 24th June, I watched a pair, which had probably lost their young, behaving in a very affectionate manner, and, as far as I could see, feeding one another. This fine bird, when undisturbed at its breeding haunts, is not at all difficult to observe, and in my experience is usually less shy than its smaller relative, the Dabchick. In spring they are frequently seen to take wing, without any apparent difficulty, and to fly for a considerable distance, an elevation of five or ten feet being occasionally, but rarely, attained. At this season, in addition to using the guttural monosyllabic alarm note *hek* or *kek*, Grebes are sometimes very clamorous, uttering their note several times in succession. The birds are indeed rather noisy, and whether a fight between rival males is taking place, or the birds are merely sportively taking rushing shallow dives, a great splashing of the water is often occasioned. When assured, they float high in the water, but an alarmed Grebe can sink its body almost entirely beneath the water. When making their escape by diving, they seem only just to rise to the surface between their dives, and travel for a considerable distance before showing themselves again. Even when simply desirous of removing themselves to a more comfortable distance from an observer, they proceed by a succession of long dives, merely remaining on the surface for a few seconds to take an observation on their own account. If the surface of the water is ruffled it is easy for a Grebe to get away without showing itself, until it has put a safe distance between itself and its pursuers. One hot calm September afternoon, I noticed one of these birds close in shore, off a pebble beach on the coast of Norfolk. I waited until it dived, then ran a little way and lay down until it came up and went down again, then got a little nearer to the bird. It remained below the surface while I counted eighty or ninety. The third time,

unfortunately, it came up before I expected it to, and saw me moving. Of course the bird disappeared at once, and it did not *show* itself until it was some two hundred yards out to sea.

Grebes (especially when they come off the nest) often indulge in an exhaustive wash, dipping and shaking their heads beneath the surface of the water, and splashing with their wings and feet in evident enjoyment. Washing is not, however, confined to the breeding season. One morning in the early part of November, soon after dawn, I saw a Grebe emerge from a bed of rushes and proceed to take a succession of splashing dives by way of a morning tub. During the course of the day Grebes usually spend some time in preening and dressing their feathers, often for this purpose careening themselves over on one side, the action of one foot, gently paddling, causing them to revolve slowly. It is doubtless while thus engaged that the Grebes accumulate those masses and balls of their own white feathers usually found in their stomachs, the reason for the presence of which has not yet been satisfactorily demonstrated.

When undisturbed the Crested Grebes may be observed floating placidly on the water, their long necks folded back on their shoulders, and their bills, sometimes turned a little to one side, nestling among their feathers. At such times the birds float comparatively high in the water; but when alarmed they sink lower, while the long neck is stretched upwards to its utmost, and their heads are turned from side to side with a watchful and vigilant air. Grebes may sometimes be seen with their long necks stretched out flat upon the water, and their heads partly submerged, probably searching for some kind of food. They can swim very fast, and no more perfect paddle can be imagined than the Grebe's foot. With the forward stroke the broadly margined toes, the foot and the tarsus, close upon themselves, while the tarsus itself presents only a knife-edge to the water; with the back stroke the tarsus strikes partly with the broad dimension, and the spreading foot presents the utmost resistance to the water.

The winter dress is assumed at a comparatively early date. On the 26th September, a Grebe was far advanced in change, hardly a sign of the rufous colour on the sides of the head remaining; and by the 16th of October the full winter dress had been assumed.

Their breeding time varies very considerably from divers causes; severe frost late in the winter and in early spring may delay the old birds in commencing nesting operations, and the early clutches of eggs are probably liable to be destroyed by crows, as the young certainly are, later on, by pike. Late springs must be especially detrimental to the Grebes, by checking the growth of the reeds and rushes, and causing the nests to be more than ordinarily exposed. Indeed, the

early nests are almost always built before the rushes have shot up sufficiently high to afford much shelter. I have known fairly fresh eggs to be taken in Warwickshire as late in the summer as the 24th June, and young birds, about one third grown, as early as the 19th June.

The nest is usually placed just inside a bed of reeds or rushes. Usually it is a floating structure moored to the rushes, but it appears that it is sometimes built up from the ground. The nest is a flat platform of green rushes (when fresh), reeds and other water plants, merely laid one on the top of the other and not worked up into shape; it is but little raised above the surface of the water, and is usually quite wet. So far from being cold, it has been proved that the nests are, to some extent, hot-beds. The eggs are usually three or four in number, rarely five; while as many as six and (in Spain) seven have been found. They are said to be laid on alternate days.

The eggs, when fresh, vary from a dull creamy to a greenish-white, with a chalky surface, of irregular and varying thickness, overlying a shell tinged with green—this colour is very apparent when the egg shell is held up to the light and examined through a hole in one side of the egg. From constant contact with the more or less decaying vegetation of which the nest is composed, and the bird's feet, the eggs usually become stained with brown. The outline of the eggs of all our Grebes is a more or less nearly perfect oval; but the shape is hardly ever, if ever, that of a double cone, that is to say the largest diameter is rather nearer one end than the other, so that it is possible to say which is the "big end"; usually the egg tapers off slightly towards the small end, which is in nearly all cases rather more pointed than the other. The eggs measure about 2.2 in length by 1.45 in breadth. Both sexes take part in incubation.

The Great Crested Grebe covers its eggs on leaving the nest; but opinions differ as to whether this is done to protect them from cold or from observation. It seems possible that the birds, when once the clutch of eggs is complete, do not usually remove the covering during incubation.

Young Grebes doubtless frequently fall a prey to the large pike usually found in the haunts of these birds, and in only one instance have I ever seen more than two young birds following their parents. The young birds are said to be fed with small eels, roach and other fish, and aquatic insects, as well as with some vegetable food. Grebes take great care of their young when the latter are quite small. One summer evening I watched an old bird, in a thin bed of rushes, carrying her young on her back, some portion of her wings (the secondaries or tertials perhaps), or the scapulars being slightly raised, forming a sort of cradle. Four days later both the old Grebes had the young out on the open water, evidently

giving them an early swimming lesson. When first noticed the young birds were on the water between the old ones; presently one of the latter sinking itself low in the water, came up under them, and so took them on to its back, then sinking again, moved away sideways and left them floating on the surface; this was repeated several times, until, becoming alarmed, the old birds hurried their charges off to the shelter of the thick rushes ("Birds of Oxfordshire"). The young birds, when partly grown, utter a shrill, plaintive, piping cry when following the old birds for food.

In Wood's "Natural History," the woodcut of the Crested Grebe (misnamed "Eared Grebe") shows the bird with the tarsus at perhaps a greater angle than 22.5° with the ground, and in the same work the Little Grebe is shown standing with it at 45° at least. These attitudes are, I should say, pretty correct. The Little Grebe carries its tarsus, if anything, even more upright. I have only once had an opportunity of handling a living specimen of the Great Crested Grebe, in September, 1881. It *could* stand fairly upright (in a very similar attitude to the bird in Wood's book before mentioned), with its tarsus well off the ground, but at this distance of time I cannot say just at what angle. In this position it was quite capable of walking. The bird was, however, very tired (it had been picked up in a field at a little distance from water), and when left to itself preferred to lower its body and rest on its breast. I had one afternoon an opportunity of observing the movements on land of a Crested Grebe, which had been received at the Gardens of the Zoological Society a few days before. The keeper in charge of it told me that it occasionally left the stone basin of water, in which it passed most of its time, and rested on the bank, lying down on its breast. It was easily induced to leave the water for my benefit, when it walked with short hobbling steps, but only took a few steps before sinking down on its breast. It soon got up again of its own accord, walked to the edge of the water and glided in. When it walked its body was carried at an angle of about 45° , or rather more, with the ground. But, although it walks, I do not think this bird can, or will, stand still, for more than a moment, in a semi-upright position.

The food of the Great Crested Grebe consists of small eels and other fish, tadpoles, frogs, crustaceans, mollusca, and aquatic insects; seeds and portions of aquatic plants have also been found in their stomachs, which are not uncommonly crammed with a mass of the Grebes own small white feathers.

Old, or local, names for this species are Doucker (probably of Danish origin), Arsefoot, Loon, Gaunt, Mulrooken (Ireland), Muffler, Tippet Grebe, Gwyach gorniog and Cargoose.

The adult male in summer has the forehead, crown, occiput and nape blackish-

brown, glossed with dark green, the feathers of the crown elongated into a flat crest, longest at the sides and so somewhat forked. Hind neck greyish-brown; back and upper parts generally, brown, some of the feathers varied with greyer shades and pale margins; lower back and rump a paler uniform brown; primaries brown, or greyish-brown, with dark shafts and a little white near the base of the inner webs; the inner ones tipped with white, but not in all cases. Secondaries white except the outermost, which has the outer web, except the tip, brown; in some cases the two outermost secondaries are brown, tipped with white, and the next one mottled brown and white. The older birds probably have most white on the wing. Innermost wing feathers and axillary plume white, some of the former marked with brown. Carpal ridge conspicuously white. Lores (between the nostril and eye) buffy-white, continued in a narrow line over the eye to join the white on the sides of the face. Between the angle of the mouth and the eye (but to the rear of the bare skin) a small patch of dark feathers. Chin and upper part of the throat white. From the hinder part of each side of the head springs a ruff or frill of elongated feathers, which is only just interrupted on the throat; the fore part of this ruff is light bright chestnut, the colour merging into the white of the face, the hinder part the same colour as the crest. Forepart of the neck white, passing up in a point to the throat, and edged as far as the base of the ruff, and terminated with light chestnut. Breast and belly shining white. Sides of the breast, and sometimes the lower part of the neck, very slightly and indistinctly mottled with and tinged light chestnut. Sides of the body and flanks light chestnut and dusky mixed. Lowest part of the body slightly dusky. Bill pinkish, culmen brown. Iris crimson (a white ring round the pupil in some cases). Bare space from the bill to the eye reddish (dusky in winter). Tarsi and feet blackish-green on the outside, lighter and yellower on the inside. Length 22 inches; wing 7.5 inches. The female is rather smaller. In a pair killed in June, the female had a greater proportion of dark colour in the ruff.

A male in winter dress, killed in February, has the upper parts brown, the feathers of the mantle broadly edged with greyish-brown; and it may generally be remarked that the brown of the upper parts has a greyer tinge at this season. Top of the head and (smaller) crest dark brown—appearing blackish in the distance. Sides of the face and head, where the ruff is in summer, dull white, tinged with dusky brown, the feathers still slightly elongated. Sides of body and flanks mottled with dusky and showing no trace of rufous colouring.

Young birds of the year carry remains of the dark lines on the sides of the neck during the winter. The young in down have the head, neck, breast and

belly white, tinged with brown on the back of the neck and marked on the head and neck with blackish-brown. On the crown a patch of flesh-coloured pink bare skin, surrounded by a triangular blackish-brown mark. Back, sides of the body and wings pale brown marked with stripes of blackish-brown; edge of the wing light. These stripes become less distinct as the bird increases in size.

Family—*PODICIPEDIDÆ*.

RED-NECKED GREBE.

Podiceps griseigena, (BODD.)

THE Red-necked Grebe visits our eastern coasts not uncommonly from autumn to spring, but it is much less frequent in the west; it is, while with us, more marine in its habits than the other species of Grebe, and occurs much less frequently on inland waters. It visits the Shetlands occasionally in autumn and spring, and is said to be not uncommon in the Orkneys, though Dunn does not mention meeting with it. It has occurred in Skye, but not in the Outer Hebrides, and it is rare on the west side of Scotland; but on the east it is not uncommon, and the same may be said of Northumberland and Durham where it generally appears in severe weather, but has also occurred in summer plumage. It visits the coasts of Yorkshire and Lincolnshire, sometimes in some numbers, and to Norfolk it is a not very numerous visitor, usually to the coast, in late autumn and early spring. In Essex it is somewhat rare. In the Channel it is uncommon, but in Dorset it occurs not very infrequently on the coast in winter, and has once appeared as early as August. To the bays and estuaries of Devon it is a casual visitor of occasional occurrence, but in Cornwall it is said to be almost as common as the Crested Grebe (which is not very uncommon in winter) in winter, and to occur occasionally in spring with some of the red feathers of the neck appearing. Elsewhere on the coast of the west of England and of Wales



♂ SUMMER

RED-NECKED GREBE

♂ WINTER

it is a rare bird. Inland it is recorded from several counties, but some of the records must be received with caution, as the Little Grebe, in summer dress, has sometimes been referred to as the "Red-necked Grebe." In Ireland, only some five or six examples have been obtained.

Considerable visitations of this species to parts of the eastern coasts occasionally take place, usually during severe weather, when the birds have perhaps been frozen out of their haunts on the other side of the North Sea. Stevenson recorded in the "Zoologist" for 1865, that great numbers visited Norfolk in February and March, 1865. He himself examined, or heard of on reliable authority, at least five and thirty examples brought into Norwich alone, a large proportion of them between the 18th and 28th of February. They were simultaneously met with in Yorkshire and Lincolnshire, while others were to be seen in the markets of Cambridge and London at the same time. Large numbers visited the coast of Yorkshire during the severe weather in January, 1891, as recorded by Mr. T. H. Nelson, who saw many off Redcar, and reported that there must have been some hundreds between the Tees and Huntcliffe, the fishermen reporting most surprising numbers of Grebes at sea. Unusual numbers were also reported from Scarborough and Flamborough at the same time ("Zoologist," 1891). Mr. W. J. Clarke recorded the occurrence of no less than twenty-eight at Scarborough during the month of January; also that he had seen seven which were shot at Filey, where, he was informed, a large number of others were obtained ("Zoologist," 1891, p. 193).

The Red-necked Grebe, if we consider the larger form inhabiting Eastern Asia and North America as specifically identical with our form, is a "circumpolar species breeding in the sub-arctic and temperate parts of Europe, Asia, and North America" (Seebohm, "Geographical Distribution of British Birds"). It wanders southwards in winter.

The Red-necked Grebe does not breed in Iceland, where, however, it has occurred, or the Færoes, but is found in Southern Scandinavia (although it is said to be only an uncertain breeder in Norway), Denmark, and Northern Germany, where it is abundant. "It is also plentiful throughout the Baltic, and as far north as the reedy lakes at the head of the Gulf of Bothnia; while in Russia it is found nesting from Archangel to the Black and Caspian Seas" (H. Saunders). Seebohm says it does not appear to breed south of the valley of the Danube, nor west of the valley of the Rhine, but it does so in South-west Siberia and Turkestan. The birds inhabiting East Asia and the northern parts of America, including Alaska and Greenland, have been separated under the name of *P. holboelli*, and are larger than our bird. The latter is not common in the Mediterranean.

Professor Giglioli says that this species is one of the rarest in Italy, although less so in the north ("Ibis," 1881).^{*} But it visits North Africa, and, according to Colonel Irby, some specimens obtained in Morocco by Favier were so young that they must have been bred in the country, and Colonel Irby saw many at the lakes of Ras el Doura in April, but had no record of it on the Spanish side of the Straits ("Ornithology of the Straits of Gibraltar"). Mr. H. Saunders thinks that a bird obtained in Iceland probably belonged to the larger form. At Heligoland young birds of the year are frequently shot in autumn, but adults in winter as well as in spring dress are rare.

The Red-necked Grebe occasionally occurs in this country in full breeding dress, and examples in full plumage have been killed in Norfolk as late in the season as the latter part of April and the third week in May, while the Rev. T. J. Blofeld saw three on Hoveton Broad on the 14th of April, 1845 ("Birds of Norfolk"). At the end of summer, or early in the autumn, individuals have been obtained in such immature plumage, and so early in the season, as to give rise to a suspicion that they might have been bred in this country. Mr. E. A. S. Elliot has recorded the appearance of a young bird at Kingsbridge during the month of July, 1892, which was shot and brought to him on August 1st. Messrs. D'Urban and Mathew have seen it, and consider that from the very immature condition of plumage, it is entirely unlikely that it could have wandered far from where it was hatched, and that there is justification for Mr. Elliot's opinion that it had strayed from a nest on Slapton Ley. Its cheeks were striped with dark lines (Supplement to the "Birds of Devon"). When I was at Cley, in November, 1886, Mr. J. H. Gurney called my attention to an example which was shot on the 10th of August in that year, inside the sea-wall at Salt-house; it exhibited the dark stripes of immaturity on the throat, and was hardly full grown. Booth also shot an immature bird on Breydon flats in August, 1873.

The Red-necked Grebe resorts to reedy lakes and pools for breeding purposes, and builds a floating nest of water-plants. It is said to be very watchful when incubating, and to cover the eggs and leave the nest long before the latter can be discovered. The eggs are of the usual Grebe type, and three to four in number. They are about 2.00 long by about 1.30 broad. "They are smaller than eggs of the Great Crested Grebe, though both dimensions overlap, but never on the same egg. This is also the case with the eggs of the Black-throated and Sclavonian Grebes, which are always smaller" (Seebohm).

^{*} The Red-necked Grebe has been more frequently obtained in Italy of late years, and several Italian Ornithologists have expressed independently their belief that it nests in the marshes of their country (*cf.* "Avicula," 1897, p. 131; *ib. cit.* 1898, p. 90).—H.A.M.

The adult male in summer has the bill black, base of the sides of the upper and base of the under mandibles yellow. Iris pearly white. Bare skin between bill and eye "reddish-black" (Seebohm). Forehead, crown (taking in two-thirds of the eye, but not passing below it), occiput, nape, and hind neck nearly black, glossed with green bronze; the feathers of the back of the crown elongated, and forming a drooping crest, only slightly longer at the sides than in the middle of the hinder margin. All the feathers of the upper part of the hind neck, from the base of the occiput downwards, are chestnut-red at the base. Back and upper parts generally, deep rich brown, rather glossy, the feathers on the mantle usually showing pale edges. Primaries dark brown, shafts blackish. First two outer secondaries brown, the next marked with white, the next two half white, the next chiefly white, but all with dark shafts. Axillaries and wing-lining white. Chin, face, sides of the head and throat, french-grey (or pale slate-grey), the feathers about the ear-coverts somewhat elongated. From the base of the bill a narrow line of small dark feathers to the eye. A white line passes from this, below the eye, and between the dark cap and the grey of the face, to the nape, becoming broader on its lower part. The rest of the grey is obscurely margined with white. Front and sides of the neck rich chestnut-red. Breast a paler brownish chestnut mixed with a little white. Belly white. Sides of body and flanks marked with dusky and a little chestnut. Lowest part of body dusky. "Legs and feet dull green, darkest at the joints" (Seebohm). Length 16.5 inches; wing 6.5 inches. The female is very similar, but rather smaller.

The iris of this species is usually white in the adult and straw-coloured in the young bird. But by some authors the iris has been described as red, and brownish-red. The accurate Montagu describes the iris of a bird killed in winter as hazel.

In winter the bill is paler and yellowish, culmen brownish horn. Top and sides of the head, to a little below the eye, lores, nape, neck all round (but this is much paler in front), back, wings, and upper parts generally, brown, with grey edges to the feathers of the shoulder, mantle, and scapulars. Chin, lower face and throat (incroaching on the nape), breast and belly white. Sides of the breast thickly mottled with brown and with darker feather-shafts; sides of the body and flanks mottled with the same. There is no hood, or drooping crest. Birds in this dress are easily distinguished from Crested Grebes in the same stage of plumage, by their dark lores and the absence of the whitish line over the eye. Tarsi and toes dusky greenish-yellow on the inside and upper side, dusky on the joints and edges of the lobes, outside and underside dusky.

A young bird, in the University Museum at Christiania, had the face and

throat white, with two broken dark lines extending backwards from near the eye.

The "young in down have the upper parts dark brown, striped with white on the head and neck, and with pale brown on the back; the under parts are white, striped and spotted on the throat with dark brown" (Seebohm).

An albino variety, taken at Beachy Head, is mentioned in "Yarrell," and may be the example in Mr. Marshall's collection.

Family—PODICIPEDIDÆ.

SCLAVONIAN GREBE.

Podiceps auritus (LINN).

THE Slavonian or Horned Grebe is a winter visitor, occurring from autumn to spring, more commonly towards the end of winter, and occasionally sufficiently late in spring to have attained its full breeding plumage, which is remarkably striking and handsome.

It is the commonest of the Grebes which visit the Shetlands, arriving in very small numbers in October, and leaving after a few days; re-appearing about April, when it makes a stay of a few weeks, and sometimes remains until the end of May. Dunn considered it rare in the Orkneys, where, however, he saw seven or eight during his stay, in the month of April. It is met with sparingly every winter in the Hebrides, and it is thought that it may possibly breed in some of the outer group of the islands. To the coasts of Scotland it is a regular visitor, but Booth stated that in the east of Ross-shire, and in Sutherland, on both salt and fresh water lochs and firths, he met with these birds repeatedly in spring (as late as the end of March and the early part of April), but never noticed a single specimen in autumn or winter. In Northumberland and Durham it is a not uncommon visitor, and has been procured in



Wetmore

♂ WINTER

SLAVONIAN GREBE ♂

SUMMER

full summer dress on at least one occasion, as late as the 26th April. It visits Norfolk regularly and commonly, usually in the early part of the year, specimens have, however, been procured (but rarely) as late in spring as April and even May, some of them being in full nuptial plumage; it is also occasionally met with in late autumn. It visits the coast of Essex from autumn to spring, and is found all along the coast of Sussex in spring, autumn, and winter, resorting in severe weather to the estuaries and the ditches in the marsh lands. It is a frequent winter visitor to Dorset, rarely met with late enough in spring to have assumed the breeding dress. It appears to be less numerous in Devon, although occurring both on the north and south coast, but adult birds are rare, and only one example has been obtained in breeding dress, which was shot in Torbay. Specimens in winter dress are occasionally found in Cornwall, but it is less common in that county than either the Crested or Red-necked Grebes. Montagu rescued from the hands of a fisherman, as he was just going to pluck it, a male in full summer dress, killed near Truro on the 4th May, 1796. Only two examples are recorded from Somerset, although it occurs not uncommonly on the Welsh coast; but on the north-west coast of England it is decidedly a scarce bird. It is a regular winter visitor in small numbers to Ireland, and is usually found on salt water.

The Sclavonian Grebe sometimes visits the inland parts of England, and is not a very uncommon visitor to Oxfordshire in the winter months. Most of these examples are observed in some part of the Thames valley, either on that river or one of its tributaries, and they probably follow the course of the river up from the mouth. It is also not an uncommon visitor to Northamptonshire. Booth remarks that a severe winter often brings many of these birds along the East coast, several finding their way on to the ponds and rivers when free from ice.

The Sclavonian Grebe is a circumpolar species, breeding in sub-arctic regions, and still further north under the influence of the Gulf Stream. It has been met with in Jan Mayen Island in June. It breeds commonly in Iceland, but not in the Færoes, and is sparingly distributed over the whole of Sweden, from Gottenburg up to East Finmark and far up into Norway (Wheelwright), in the last-named country it is a regular breeder. It breeds also in Denmark and Russia. In winter it wanders south over most parts of the rest of Europe, but it is only rarely met with in the Mediterranean, although Colonel Irby thinks that it is probably often to be met with in winter in the Straits of Gibraltar. It is very rare on the coast of Italy. "In Asia it ranges across Siberia to Japan, and about as far south as lat. 24° during the cold season" (H. Saunders). It

breeds in Alaska and is a common summer resident along the Yukon; also across the American continent to the east and west shores of Hudson Bay. It breeds in Manitoba, and in all suitable places throughout Ontario, also within the limits of the United States (as for instance in Northern Dakota) over which it is generally dispersed in winter. In Greenland, according to Reinhardt's list, a few immature birds only have been obtained in the south. In winter dress it is by far the commonest of the Grebes which visit Heligoland, but it is extremely rare there in breeding plumage. During late autumn individuals in their first winter dress are often shot, and old birds are met with in the course of the winter, especially during severe cold.

The late E. T. Booth received at various times, between the years 1868 and 1885, information respecting some small Grebes which annually frequented a little loch near the west coast of Ross-shire, and regularly reared their young there. Although prevented by squally weather from obtaining more than a momentary glimpse of a bird when he visited the spot, Booth was convinced from the description of the bird that it was the Slavonian Grebe. ("Rough Notes on Birds.") But Mr. A. H. Evans, who with Mr. J. A. Dixon, has visited the loch at intervals during the breeding season for three years in succession, and has constantly seen both the male and female of the Grebes in question, is of opinion that they are merely Little Grebes. They have procured eggs from the nest, placed exactly where Booth originally saw it, and these eggs are indisputably those of the Little Grebe. ("Annals of Scottish Natural History," 1892.) The late Lord Lilford could not attribute to any but the present species a Grebe which flew round his boat on the Nen close to Lilford, on 30th July, 1887. Some of the birds shot in full breeding dress on the Norfolk Broads in the latter part of April might be presumed to have contemplated breeding there if undisturbed. But there is no reason, except the late date in spring of their appearance, to suppose that they would have done so. A female (supposed to be young) killed on Sutton Broad, with an adult and a younger male, on the 16th April, 1862, and examined by Stevenson, had no eggs in the ovary larger than good-sized pin heads ("Birds of Norfolk"). Indeed, this bird, like some other northern species, seems to be in no hurry in spring to resort to its breeding quarters, and those seen in the Shetlands in May—sometimes until the end of that month—which are nearly always seen in pairs, idle their time away in deep water, sometimes going nearly a whole day without searching for food (Saxby).

The Slavonian Grebe arrives at its breeding haunts among the Canadian lakes as soon as the ice begins to break up in spring, and remains quite late in the fall, individuals being occasionally seen on Lake Ontario during the winter

(McIlwraith). It resorts to freshwater lakes and other inland waters in the breeding season. The nest is usually described as a floating structure of vegetable material fastened to the reeds or rushes in shallow water, and of the same character as those of the other Grebes which breed in Europe; but it is stated to have been found on a tussock of grass in the water, and once on a stone.

The Rev. H. H. Slater and Mr. T. Carter record taking a great many eggs in Northern Iceland, the reason being that there had been a storm of wind recently, and the waves had agitated the floating nests (made of a kind of *Myriophyllum*, and moored to the reeds) to such an extent as to upset many of the eggs into the water. ("Zoologist," 1886, p. 156.)

The eggs are similar in shape and colour to those of the other species of Grebes here described, and measure about 1.75 inches long by 1.20 broad. The number of eggs in the clutch is stated by various authors as from two to six, and even seven.

The Dusky Grebe of Pennant, Montagu, and other old authors, is this species in winter dress, but there seems to be no local name for it. The modern Norsk name is Stortkravat Toplom.

The adult male in summer has iris crimson, with a white ring round the pupil usually present, the bill black, tip pale yellow, and the base of the under mandible pinkish. Line of bare skin from the bill to the eye red. Crown of the head and nape nearly black with a greenish gloss. Forehead, chin, throat, and sides of the face and head, brownish-black, with some green gloss on the last. The feathers of the hinder part of the face, sides of the head, and the throat, elongated, and forming a ruff which almost encircles the head. The feathers of the dark top of the head raised on each side, increasing the "horned" appearance. From the base of the upper mandible on each side, passing over the eye to the hinder part of the head, a line of feathers, elongated above and behind the eye, and considerably so on the hinder part of the head, where they form a long tuft on each side of the nape, reddish chestnut in front of the eye, yellowish above and behind it, and chestnut red on the terminal part. Hind neck, back and upper parts generally very dark brown, with pale edges to the feathers of the mantle. Primaries and wing coverts paler brown; primaries with dark shafts, and whitish at the base. The first, outer, secondary is dark, the second, and sometimes the third, partly dark, the amount of dark colour varying greatly in different specimens, the rest white. Front and sides of the neck below the throat, and upper breast, reddish chestnut. Lower breast and belly white, mixed with a little chestnut on former, and in some cases dashed on the latter with pale yellowish chestnut. Lowest part of

the body dusky. Sides of body and flanks reddish chestnut, mixed here and there with a very little dusky. Wing lining and axillaries white. Legs and feet olive green on the inside, blackish on the outside. Length about thirteen inches; wing 5.5 inches.

The female has the ornaments of the head rather less developed, and is usually said to be rather smaller.

The full plumage is probably not attained in the first summer. A female killed in Manitoba in the beginning of July, probably not a breeding bird, had the throat, sides of the face and head, dusky-brown, varied with soiled white, and very little elongation of the feathers. The superciliary line only slightly developed and pale in colour; the feathers at the sides of the crown not raised; the chestnut of the neck less rich than in the adult. Lower breast and upper belly obscurely mottled with dusky; sides of the body and flanks more mixed with dusky.

In winter, the forehead, top and sides of the head (but hardly extending below the eye), nape, back of the neck and upper parts generally, of a varying shade of blackish grey or dusky, with a slight brown cast. Primaries dusky grey. The sides of the lower throat and upper neck dusky, extending across the front of the neck, but much paler on that part. Between the base of the bill and eye a whitish spot; below this a bare patch of pink skin. Sides of the body and flanks marked with dusky lines. Lowest part of the body somewhat dusky. Chin, throat, and rest of the under parts white, silvery or shining on the breast and belly. The white on the throat extends up the sides, and nearly meets on the nape. Bill dark horn colour, tip and base paler and pinkish, bare space between the bill and eye, the angle of the mouth and edges of the eyelids pink. Inside of tarsus and upper surface of toes grey, outside and membranes blackish.

Young birds in their first autumn and winter are very similar, rather more ash-coloured, and the white on the head less pure; but Dr. Coues states that the newly-fledged young are curiously striped on the head with rufous, dusky and white. The iris is sometimes golden yellow.

The young in down have the head, neck, throat, breast, and belly, white, marked on the head with black, and on the neck with seven black lines, the two on the forepart of the neck not continuous on the upper part, and divergent on the lower part. At the base of the bill and in front of the eye a bare patch of reddish skin. Another on the crown, surrounded by a triangular black patch, the sides of the base of which are prolonged, partly enclosing a white patch, and are continued as neck lines. Another pair of lines start from the base of the



EARED GREBE ♀ WINTER
♂ SUMMER

upper mandible, passing over the eyes. The sides of the body and the back blackish grey, slightly mottled on the former, and lined on the latter with greyish white; these lines become less distinct as the chick grows. Dark lines on the face are apparent, though indistinct, until after the young bird is full grown.

Booth observed a pure white Grebe (apparently a female from its size) on Loch Slyn, Ross-shire, in March, 1869. It was accompanied by a full plumaged male of this species, which he shot.

Family—PODICIPEDIDÆ.

EARED GREBE.

Podiceps nigricollis, (BREHM.)

THE Eared, or Black-necked Grebe is an occasional, perhaps a regular, visitor to this country at various seasons from autumn to spring; but it is at the latter season, and to the eastern counties of England, that its visits have been most frequent.

It is recorded to have visited the Orkneys; one was shot in Skye in January 1895 (H. A. Macpherson, "Zoologist" 1895, p. 66) and it has once occurred in the Outer Hebrides. But it can only be termed an accidental visitor to any part of the East coast of Scotland and is still rarer on the west. To Northumberland and Durham it is a very rare visitor, and it occurs occasionally on the coasts of Lincolnshire and Yorkshire. To Norfolk the Eared Grebe is almost entirely a spring visitor. Out of thirty-three specimens enumerated in Stevenson and Southwell's "Birds of Norfolk," three occurred in March, twelve in April, and ten in May, three occurred in autumn, two of them in August and September and four in winter. In the spring of 1862 two pairs were killed on Horsey Mere about

the 9th of May, and a fifth in equally rich plumage near Yarmouth on the 28th. Since that date this species has been met with less frequently, but an example still in summer plumage was shot at Salthouse, on the 21st August, 1888, and another is said to have been observed on Rockland Broad on the 28th July, 1892, (Messrs. Gurney & Southwell's "List of Norfolk Birds"). To Essex it is an uncommon winter visitor. It is the rarest of the family in Sussex, making its appearance at uncertain times off the coast, and on the pools and rivers; it is nearly always met with in winter, though one was shot in April. Much the same may be said of Dorset, and it occasionally occurs on the coast of Hampshire. It is a casual but not rare visitor in winter and spring to both north and south Devon, the proportion of examples in the full adult plumage in spring being larger than in any of the Grebes already described. In Cornwall it is met with more frequently than the Slavonian Grebe, but generally in immature or winter plumage; now and then one is killed in nuptial dress. On the coast it is much less common and is not recorded from Somerset, nor in two recent Welsh lists. Further north on the west coast we hear little of the Eared Grebe, and it very rarely visits the coasts or inland waters of the north-west of England.

To the inland counties of England the Eared Grebe occasionally, but rarely wanders, and occurrences have been recorded from Nottinghamshire, Derbyshire, and Oxfordshire; in the last named county examples have been killed, years ago, at the end of April and in June. In Northamptonshire, too, a pair some way advanced towards full summer plumage were killed on a large reservoir in 1869.

It is a very rare and accidental visitor to Ireland, chiefly on salt water, in winter, but has occurred twice in June in nuptial plumage. One was shot on the 22nd February, 1890, on Dungarvan Bay, Co. Waterford ("Zoologist," 1890, p. 144).

This is a southern species, resident in the basin of the Mediterranean and South Africa. Summer visitor to central Europe and south Siberia, wintering on the coasts of Beluchistan and China (Seebohm). It is only an accidental visitor to Norway and Sweden, but Mr. Abel Chapman states that he recognized both this species and *P. auritus* in June, 1889, in the northern part of Jutland towards Viborg, where they inhabited shallow sheets of water ("Wild Norway," p.p. 304-314); and according to Mr. Benzon also, this species is found in north-west Jutland (Yarrell). It breeds in northern Germany, and south of this in most parts of Europe, becoming more common in the south. It is very abundant in Andalusia (Lord Lilford). According to Col. Irby it is the most common of the Grebes in the Straits of Gibraltar, breeding in lagoons and swamps on both sides. In winter they are plentiful in Gibraltar Bay ("Ornithology of the Straits of Gibraltar"). In

Palestine Canon Tristram found it abundant on the lakes of Galilee, and remaining in hundreds on the Lake of Gennesaret long after it had assumed the nuptial dress; but it retired in May to Hulch. At Heligoland the Eared Grebe has only occurred once—in winter dress. In America our bird is represented by a closely allied form (*P. nigricollis californicus*) with less white on the wing.

Pennant, who knew the Great Crested Grebe well in the breeding season, says positively that the Eared Grebe bred in his day in Lincolnshire. His words are "these birds inhabit the fens near Spalding, where they breed. I have seen both the male and female, but could not observe any external difference. They make their nest not unlike that of the Crested Grebe, and lay four or five small white eggs" ("British Zoology," 1776, Vol. II, p. 500). His figure and description on those of an Eared Grebe in summer dress. It is of course *possible* that Pennant attributed a Dabchick's nest to this bird, but he knew the latter species well.

The late Henry Stevenson was of opinion that the Eared Grebe would have occasionally remained to breed on the Norfolk Broads if undisturbed, and this seems probable, several of the females which were killed in that county having been found to contain eggs in various stages of development, up to the size of a small marble. Some of the older writers on the avifauna of Norfolk thought that this bird sometimes bred there, and the late E. T. Booth ("Rough Notes") stated that on one occasion a full-plumaged adult and a couple of downy mites were brought to him by a marshman. In Oxfordshire an example in full breeding dress was killed on the Isis in the month of June, 1847.

In summer the Eared Grebe inhabits lakes and inland fresh waters. In its nesting habits it does not differ materially from its congeners. The full complement of eggs is usually four, but sometimes five. A dozen nests of the American form found in a bed of reeds, contained, however, no more than three each, though some were considerably incubated. "They cannot be distinguished from the eggs of the Slavonian Grebe, but they are always larger than eggs of the Little Grebe, and smaller than those of the Red-necked Grebe" (Seebohm). The food of this species when on fresh water consists chiefly of beetles and other water insects. Small fish and crustaceans are also eaten, and the bird's stomach usually contains some aquatic vegetable substances and some of its own feathers. Seebohm says that the call-note of this species is described by Naumann as a high, soft, but a far-sounding *beeb*, which in the pairing season is rapidly repeated and becomes a trill, *bidder*, *vidder*, *vidder*, &c.

The question whether Grebes habitually use their wings in diving or not seems hardly settled. Mr. W. Raine says that they do ("Birds Nesting in North-West Canada"). Mr. B. Hook says that a Little Grebe he watched did not (Seebohm's

“British Birds”), and Dann said that the Red-necked Grebe did not (Yarrell). The observations of Mr. Henshaw, made in South Colorado, seem to show that these birds are more or less dependent for the hatching of their eggs upon the artificial heat produced by the decaying water plants of which the nests are made. (Coues’ “Birds of the North-West”).

Grebes appear to be naturally rather fearless birds, but when much persecuted no birds are more shy, or better able to conceal themselves and avoid observation. The following observations by Lubbock, relating to the Crested Grebe, are quoted by Hewitson. “In 1833 I knew of five Loons’ nests upon a reedy pool, where I was in the habit of setting nets and trimmers, and, arguing from probability, there were other nets of which I knew nothing, yet until the young were hatched I only twice caught sight of a Grebe.” This was in the days when waterfowl of all kinds were habitually killed in the breeding season. Now, however, that the Wild Bird’s Protection Acts have been in force for some years, and are generally observed, this fine Grebe has regained its confidence, and I have never found any difficulty in watching it on various inland waters. For another instance of the shyness which Grebes occasionally exhibit, the reader may be referred to Mr. Abel Chapman’s “Wild Norway.” A South American species (*P. rollandi*) which I often saw in the lagunas on the rivers in Uruguay, was wonderfully tame, I have frequently watched them from the banks of the rivers at a very short distance.

The adult male in summer has the bill (slightly upturned) black; a small bare space in front of the eye, reddish black. Head, chin, throat, and neck, all round, extending on to the top of the breast, black, the feathers of the face, sides of the head and nape elongated, and forming a small ruff. From behind and below the eye springs a tuft of long narrow glossy feathers, which extends backwards, the upper part of this is bright straw-colour, and the rest yellowish chestnut. Back and upper parts generally blackish-brown—nearly black—with a slight greenish gloss. Wings paler, and dusky. Primaries (partly) dusky grey with dark shafts; the outer five dark, except most of the lower part of the inner web, which is white, the sixth has a good deal of white, seventh and eighth half or more white, and three innermost* almost entirely white, but sometimes only the two innermost can be so described. Secondaries white. Lower breast and under parts (except the lowest part of the body, which is dusky, mixed with chestnut) shining white; sides of the body and flanks rich chestnut red, mixed with dusky. Legs, toes, and lobes nearly black, in dried skins, but described as olive green when fresh.

* Grebes are peculiar, or nearly so, in having as many as eleven primaries.

A female, killed at the end of May, has the upper parts rather browner than in the male. The tuft less brilliant. The sides and front of the neck merely sooty, the dark colour not extending so low down on to the breast, and being much mixed at the bottom with white and rufous. Hardly any chestnut-red on the sides of the body. Generally it is duller coloured, as well as a rather smaller bird than the male.

In winter the bill is paler in colour. All trace of the chestnut colour disappears from the plumage, as well as the elongated feathers on the head. Upper parts generally blackish-grey with a brown cast, the forehead paler. Chin, sides of the face from a little below the eye, throat, foreneck, and upper breast, become white, but the front of the neck is closely marked with dusky. Immature birds in winter are very similar. Total length about 12 inches. Wing about 5 inches.

The iris is red (variously described as scarlet, and vermilion red and crimson), but one example is stated to have had it deep rich orange. Grebes are often remarkable for the brilliancy of their irides. Thomas Forster, writing in 1817, gives "Fiery Eye" as a name for the present species. *P. rollandi* has a very beautiful iris, bright crimson, curiously veined with very narrow dark lines.

Professor Coues has pointed out the great difference that exists between the bill of this species and that of *P. auritus*. In the former the bill is rather stout, much depressed, with the lateral outlines convex; in the latter it is rather slender, much compressed, with the lateral outlines concave.

The "young in down are striped brown and black on the upper parts, and white on the under parts" (Seebohm).

Family—*PODICIPEDIDÆ*.

LITTLE GREBE.

Podiceps fluviatilis, (TUNSTALL).

THE Little Grebe, or Dabchick, is a resident species, breeding commonly throughout the counties of Great Britain, although less abundantly in Scotland, where it breeds at a considerable elevation in the west. It breeds also in the Orkneys (Dunn), and is found in summer, as well as in winter, in the Outer and Inner Hebrides, but is said to be only a winter resident in Skye, although supposed to have bred there. It only occurs in the Shetlands as a straggler in winter—according to Seebohm, from Norway. In Ireland it breeds in every county.

Although a resident species, the Little Grebe wanders from its usual haunts in winter, especially when frozen out in severe seasons. At such times it appears that a certain number make their way to the sea coast, or the marshes adjacent thereto, and individuals at that season are known to frequent brackish water, and have been observed on the sea. That the Little Grebe is capable of performing migrations, presumably by flight, is evident from its regular appearance in spring on pools which it is not known to frequent in winter. The late E. T. Booth was of opinion that in autumn a partial migration towards the coast undoubtedly took place. Further evidence of the migratory habits of the Dabchick may be found in the "Migration Reports" for the years 1883 and 1886. It occurs not uncommonly at Heligoland.

The Little Grebe is an Old World species. In Europe it ranges further north in the west than in the east. It is found in the southern and middle parts of Sweden, and breeds sparingly in Southern Norway. It is very rare in Finland and the northern part of Russia, but breeds in Denmark, Northern Germany, and Holland, and southward throughout the rest of Europe. It breeds commonly in Palestine. It is migratory to some extent in the more northern parts of its range. A resident in North Africa in suitable localities from Egypt to Morocco; it is abundant on the Gold Coast and other parts of the west coast of Africa. It is resident in South Africa and Madagascar; across Asia (south of Mongolia and Siberia) to China and Japan, and down to Ceylon; the Malay Archipelago and parts of Australia. In some of the warmer parts of its range it breeds in the mountains at a considerable elevation. The birds inhabiting India, China, the Moluccas, South Africa, and Madagascar, have been separated from the typical form by Dr. Sharpe.



LITTLE GREBE ♂

Allied species are found in South Australia, New Zealand, and North America.

In September, 1889, I found the Little Grebe abundant in the Kennet and Kennet canal a few miles above Newbury. One morning I saw between thirty and forty in a walk of about five miles, without looking out for them particularly closely. On one occasion I saw six together—possibly a pair of old ones and their young. Their loud, ringing, chattering cry was very frequently heard. They were surprisingly tame, and several times I walked up within ten yards of a bird before it dived. Some birds, after diving, came to the surface again within that distance of the spot where I stood, but most of them did not appear again, having probably come up within the shelter of the thick rushes and water plants. The old birds were still in very fine summer plumage, the upper parts appearing nearly black, and the bright, rich, chestnut-red on the sides of the face, cheeks, and neck, was very conspicuous. In severe weather, when the ponds and streams are frozen up and covered with snow, the Dabchick is driven to hard straits, and those individuals which cannot make their way to unfrozen water in the salt-marshes, frequently succumb to starvation, or are killed by their human enemies, being shot by gunners and even caught by hand. At such times the Little Grebe may be found in strange places. During the severe winter of 1890-1, on the morning of the 3rd of January, a Dabchick was brought to me for identification, which had been picked up dead on the snow, under the windows of a house on high ground, and at least two miles from any water ordinarily frequented by this bird.

The Dabchick is quick and abrupt in all its movements, and is a very active bird. When seen on the open water with other wildfowl they are usually observed swimming about in and out among the other birds with great rapidity, reminding one of torpedo boats among slower, heavier craft. When feeding they dive with great abruptness, popping up again like a cork at a few feet or yards distance of the place where they disappeared, and showing a marked contrast to the graceful and easy manner in which a Crested Grebe glides beneath the water and as quietly emerges again. The Little Grebe can assume a fairly upright position when on land, and so far from resting on the whole length of the tarsus, carries the latter at an angle with the ground of more than 45°. Any one who has had the opportunity of studying the ways of a Dabchick, when brought into a room, must have been struck with its activity, and the rapidity with which it will "patter" about the floor.

The powers of flight possessed by this little bird have been considerably under-rated, and it has been credited with much less willingness to take flight than it really exhibits. On a moderate sized reservoir, in Oxfordshire, I have often seen these little divers rise from the water and fly for a considerable distance with rapidly beating wings. This habit is more frequent in spring, but may be

witnessed at other seasons, though it is most uncommon when the birds are engaged in incubation, or have young. On the 12th January, one year, while watching the movements of a number of wild-fowl, including Mallards and Wild Ducks, Tufted Ducks, Pochards, Golden-eye Ducks, Coots, and Moorhens, I saw a Little Grebe twice rise from the water, without being at all alarmed, and fly some distance across the water. But when I have surprised these birds suddenly at close quarters, in the sluggish streams, broad ditches, and small ponds, which they chiefly frequent in open weather in the winter, they have invariably sought safety by diving. In the breeding season the Dabchick haunts the smaller reed and rush grown pools, sluggish rivers, and marsh drains, in preference to the larger sheets of water, where, however, it is by no means uncommonly found. The Little Grebe, in summer, is by no means adverse to the company of man, and indeed in some degree resembles the Moorhen in its domestic habits. It may often be seen on small pools, quite close to houses, and I know a small piece of water, at the bottom of a garden in Oxfordshire, where I was assured the Little Grebe bred regularly. Instances of this kind could easily be multiplied, and the Little Grebe is not entirely absent from London. Formerly it used to nest on the round pond in Kensington Gardens, and at the present day it inhabits and nests regularly in St. James' Park. A correspondent, who had often watched the Little Grebe feeding her young, wrote:—"The latter swim about in shelter of thick flags, and the mother dives after the fry, I think of roach, and having caught one, pokes no more than her head above water, gives it to one of her brood, and slips under water again silently." The Little Grebe has been observed to dive with its young under its wings. Its usual note is *wcet*, often rapidly repeated and becoming a chatter. It feeds upon small fish, aquatic insects, shrimps, and other marine creatures, small molluscs, tadpoles, etc.; and vegetable substance is sometimes found inside it. Several instances of this bird being choked by attempting to swallow "bull-heads," or "miller's thumbs" (*Cottus gobio*), have been known.

The nest, which is of the same character as those of the other species of Grebe already described, is generally a floating structure in deep water, moored to reeds, rushes, or other plants; but it is sometimes built close to the shore, and attached to the herbage thereon, and also built up from the bottom in shallow water; a nest has been recorded built on a branch of a willow tree, but flush with the surface of the water. The Little Grebe breeds in April, and fresh eggs have been found quite late in the summer; it is probable that two broods may sometimes be reared. The eggs, which number from three to six (seven have been known), usually four or five, measure about 1.5 inch long, by about 1.00

inch wide; they are of the usual Grebe type, but are possibly of a more creamy tint and less strongly tinged with green on the under shell; the chalky outer crust is often very evenly spread over the surface, which is then quite smooth. The Little Grebe covers its eggs, and concerning the reason why it does so, the observations by Dr. Bowdler Sharpe may be read with the greatest advantage ("Handbook to the Birds of Great Britain").

The adult male in summer has the bill blackish, the tip pale, and the base of the under mandible and the gape bright yellowish-green. Iris reddish brown. Bare space between eye and bill dusky. Chin, foremost part of the face, forehead, crown, and hind neck, nearly black, tinged with brown, upper parts generally blackish brown, glossed slightly with olivaceous green. Primaries greyish brown. Secondaries the same, with the inner webs chiefly, and the outer webs partly, to a varying extent, white; the amount of white on the secondaries appears to vary. Younger birds have less white. Cheeks, sides of head behind and below eye, throat, and front and sides of neck, reddish chestnut. Lower neck, breast, and flanks, blackish brown, with some rufous about the flanks; rest of under parts silvery grey, more or less tinged and mottled with blackish grey, or blackish brown. Legs and toes dusky with a green tinge. The female is rather smaller, and less richly coloured.

In winter the culmen of the bill is brownish horn-colour, the rest paler and yellower. The upper parts generally are hair brown (with darker centres to the feathers), except the wings which are darker and duller. The throat and chin are white, and the forepart and sides of the neck pale dull brown, sides of head and face warmer and darker, and remains of the chestnut may be sometimes seen at the end of November. Under parts silvery white, breast tinged with drab, sides of body and flanks dusky brown, mixed with light rufous; lowest part of body dusky. Length about 9.5 inches. Wing 3.9 inches.

Young birds in their first autumn have the bill paler and yellower, and the upper parts of the plumage rather a paler brown than the adults; wings darker than the back. Sides and fore part of the neck, and the breast, as well as the sides of the body and the flanks, pale buffy-brown, becoming more dusky on the latter; the white of the belly is tinged with the same colour; lowest part of the body dusky; early in the season there are usually some broken remains of dark markings on the sides of the upper part of the neck.

The young in down have the "head, neck, and upper parts, black, distinctly striped with rufous or rufous buff; underparts white; the flanks like the back; forehead tinged with silvery grey; bill flesh-coloured; iris grey; legs dull flesh-colour with a greyish tinge" (Dresser's "Birds of Europe").

ORDER TUBINARES.

THE term Tubinares, here retained chiefly as a matter of convenience, was employed in 1811 by Illiger, to describe the Petrels, which he found to possess tubular passages to the nostrils, disposed symmetrically upon the surface of the upper mandible. The researches of Garrod, W. A. Forbes, and Dr. Gadow, have proved that the Petrels differ widely in structure from all other birds, and that they have only a superficial resemblance to the Gulls (*Laridæ*) with which they are popularly associated. While Gulls frequent rocky coasts, construct bulky land-nests of an open character, and produce numerous coloured eggs, the Petrels live a purely pelagic life (except when incubating eggs); they chiefly nidificate by burrowing under ground on lonely islands; they lay single eggs, usually white; the first plumage of the young, instead of differing widely from that of the adult, is virtually identical with the dress of maturity—except in the case of the Albatroses (*Diomedeidæ*) which, like the Gulls, build large, open nests. But the morphological distinctions which characterize the Tubinares are deep-seated and of profound significance. They will be found set forth with great clearness in the late Mr. W. A. Forbes' report on the Tubinares ("Challenger Reports," Zoology, Vol. IV, pp. 1-64).

It is for the student to follow up the various points of interest in the structure of the Tubinares, such as the structure of the hallux, the form of the stomach, the disposition of the pectoral muscles, the characters of the cæca, the presence or absence of the ambiens muscle, the form of the shoulder girdle, and many osteological details which cannot be mentioned here. It is only necessary to offer a warning, lest the superficial resemblance of the *Oceanitidæ* to the other small forms of Petrel, should lead any one to overlook the structural differences which

separate forms apparently so closely akin as Wilson's Petrel and the Storm Petrel. Our chief authority on the Tubinares was the late Mr. O. Salvin, F.R.S., to whose British Museum Catalogue (Vol. XXV) I owe many helpful references. Mr. Salvin there supplies the following synopsis of the Tubinares.

1.—PROCELLARIIDÆ. Nostrils united externally above the culmen; margin of the sternum even; no pterygoid processes; manubrium of furcula long; coracoids long, comparatively narrow across the base, and slightly divergent; second primary the longest.

2.—PUFFINIDÆ. Nostrils united externally, or nearly so, above the culmen; margin of the sternum uneven; distinct pterygoid processes, manubrium of furcula very short; coracoids short, wide at the base and divergent; first primary the longest, or not shorter than the second.

3.—DIOMEDEIDÆ. Nostrils lateral, separated by the wide culmen, each in a separate horny sheath opening forward; the margin of the sternum uneven, the sternum itself short, compared with its width; no pterygoid processes; manubrium of furcula very short; coracoids short, very wide at the base, and widely divergent; first primary the longest.

I omit reference to Salvin's fourth family of Petrels—the *Pelecanoididæ*, or Diving Petrels of the Southern Ocean—as they are not known to wander to the Palæarctic region.

The late Mr. W. A. Forbes has left on record his opinion that the character of the Tubinares, and the amount of specialisation exhibited by this great Order of oceanic birds, indicate "not only a great antiquity for the whole group, but also the great amount of extinction that has gone on amongst its members in the past, in the process of which nearly all the intermediate and less specialised forms have disappeared." Fossil bones of Petrels have been discovered in superficial deposits in several parts of the world. Thus, remains of two species of Shearwater (*Puffinus*) have been discovered on the Island of Tavolara, Italy; a third in France, and another in the United States. Lydekker records an Albatros (*Diomedea*) from the Red Crag of Suffolk.

H. A. MACPHERSON.

*Family—PROCELLARIIDÆ.**Subfamily—PROCELLARIINÆ.*

STORM PETREL.

Procellaria pelagica (LINN.)

THIS Petrel is a veritable gipsy wanderer, for it roams over the Atlantic all the summer, even reaching South Greenland, while winter often finds it flitting across the surf that breaks upon the shores of South Africa. It has occurred as late as May in Table Bay. Possibly Petrels do not breed until they are two or three years old, because single individuals occur in the interior of England in such unlikely months as June and July. Though a visitor to the Canaries, this Petrel does not seem to breed south of Gibraltar, but it nests on islands in the Mediterranean, off the North-west coast of France, and in the Channel Isles. Only one of the Scilly Isles affords a home to this Petrel, but it breeds on Lundy and on Skomer Island. In Scotland it nests on the Pentland Skerries, but is more plentiful in Orkney and Shetland. It nests in the Outer and Inner Hebrides, Ailsa Craig, as also on Rathlin Island, Blaskets, Skelligs, and other islands off the coasts of Ireland. The Swallow-like flight of the Petrel, as seen dipping over the surface of the sea, has often recalled the attempt of St. Peter to walk upon the Sea of Tiberias. Thus German sailors and Venetian fishermen apply the titles of "Petersvögel" and "Osel de S. Pietro" to the Petrel. The English synonym of "Mother Carey's Chicken" is probably a corrupted invocation of the Virgin Mary, as "Mater cara," called forth by the belief that the arrival of a Petrel, in the wake of a vessel, presages a spell of broken weather. It is this association of the Petrel with stormy seas, which has induced the Germans to term it the "Sturmvögel," or "Sturmmöve." On the coast of Sicily it is nicknamed the "Aceddu di malu tempu"; it is known to Italians generally as the "Uccello delle tempeste." The French call it the "Oiseau de tempête," or "Satanique," the latter term conveying their instinctive feeling that the little sea-bird, which braves the fury of the tempest with such intrepidity, is associated in some mysterious way with the powers of evil.

The Storm Petrel seems to shun the neighbourhood of land, preferring to follow the open sea for many months together, and those the wildest months in the whole year. There is, indeed, some doubt as to the winter habits of this



W. H. Strohawck

STORM PETREL ♂ NAT. SIZE

Petrel, which has been observed to remain at a Petrel-station on South Uist during the months of November, December, and January. Mr. Harvie-Brown states that rumours of winter colonies of Storm Petrels have reached him from other localities; so that we may find that the Storm Petrel spends more time in its island haunts than ornithologists have been aware of hitherto. But there can be no doubt that the natives of the Shetlands and Færoes regard the Petrel as a summer visitor. Mr. Raeburn states positively that the "Swallow," as this Petrel is called in Shetland, does not reach the island of Oxna for the purposes of breeding until the last few days of June, its nesting haunts being occupied, prior to its return, by Starlings, which rear their young in the Petrel's favourite holes and crevices. It is probably in consequence of the milder climate prevailing on the South-west coast of Ireland, that Mr. W. H. Turle discovered that the Petrels of the Blasket Isles had already begun to lay numerous by the last week of May; the breeding season appears to be more protracted on the Irish coast than in more northern latitudes. Mr. Turle suggests that this Petrel rears two broods in a season on the Blasket Isles. Without accepting this suggestion as proven, it is an undoubted fact that the Storm Petrel nests from early summer to late autumn. Mr. Seeborn found fresh eggs of the Storm Petrel on the Blaskets as late as September 17th, when many young birds tenanted the Petrels' nesting holes. July is the chief month in which the eggs of the Storm Petrel are laid in Færoe. Mr. Knud Anderson states that the young in down can be taken as late as November, so that, even in the Færoes, the breeding of this Petrel is evidently protracted. Saxby considered that the Petrels which breed in Shetland lay in favourable seasons about the middle of June; I have found fresh eggs of this species myself during the latter portion of that month.

Hewitson states that the Storm Petrel sometimes elects to nest in holes in the cliff at a great height above the sea; this he found to be the case on the island of Foula. Few ornithologists have sought the nesting burrows of this Petrel in such elevated situations. The Storm Petrel prefers to burrow in a low brae of soft peaty earth, in which it excavates winding passages, with frequent ramifications. Rabbit burrows are said to be adopted by this Petrel as nest-galleries; but the present species nests regularly under slabs of rock, among loose debris, or in the interstices of an old wall or ruined building, according to circumstances. The Storm Petrel lays a single egg, but two females sometimes lay in close proximity.

The egg of the Storm Petrel is white, often ringed faintly with pale red specks, and measures about one inch in length. It is deposited upon a few dry stems of grass near the extremity of a nesting burrow. The task of incubation

is shared by both sexes, but it is usual to find only one bird upon the egg. Probably the bird which is incubating is fed at night by its mate, which has passed the day at sea. The egg of the Storm Petrel is believed to be incubated for about thirty-five days. Mr. William Evans has ascertained that eggs of this species when placed in an incubator chipped on the thirty-third day, while a chick hatched out upon the thirty-fifth day. The nestling is at first covered with soft greyish-black down. The late Mr. H. D. Graham once took two Storm Petrels about a fortnight old, covered with a profusion of down, on the 8th of September. They were at first fed with very small bits of fish, which they took reluctantly, but soon developed a great partiality for cod-liver oil, and "would suck a stick dipped in oil very willingly, clattering their bills and shaking their heads with evident satisfaction. I should conclude from this that the Petrels feed their young with the oil which they have the power of ejecting from their bills." These nestlings became fledged about the middle of September,—when about three weeks old,—supposing that they were two weeks old when obtained,—and became much dissatisfied with confinement, though they still retained a great deal of down upon their bodies. "Night and day their long powerful wings were in incessant motion in their attempts to escape from the box. As soon as the lid is opened they raise themselves up until they can hook their bills on to the edge; and then, assisted by their wings, and scrambling with their claws, they hoist themselves up. When upon the top of the box, they would be satisfied for a little while, shake themselves, and dress their feathers. The instinctive love of motion, however, would soon return, and they go off on a voyage of discovery. They walk with great caution, keeping their heads down, and using their bills as walking-sticks, hooking hold of any inequality to assist themselves along, and keeping themselves up, for they have a constant tendency to topple over on their faces: they also are of great service to feel their way, for their sight seemed very imperfect, and their eyes were generally closed." [This we might have anticipated, from the fact that this Petrel passes the first few weeks of its existence in more or less complete darkness.] "When informed by the bill that they are arrived at the edge of the table, the closed eyes open, and an anxious survey is taken of the depth below, and after considerable preparation and thought, the hazardous leap is taken, and a short flight performed in safety to the floor. These little birds seemed to have an irresistible instinct which led them to attempt to surmount every obstacle which fell in their way. When walking on the table every book and desk must be climbed by means of the hooked bill, with the assistance of claws and pinions." Mr. Graham took another young Petrel from its burrow on the 18th of October, when the bird was quite

free of down on the upper parts, but retained a considerable amount beneath, "giving him the appearance of a bird sitting in a nest of wool." This bird could fly well, and its wings were in constant motion during the night. It would not have left the nest naturally until the greater part of the down had disappeared,—at least I received a well-fledged nestling with but very little down on its belly from the colony on Skomer Island. The Rev. S. H. Saxby reared five young Storm Petrels upon train-oil which they took from a brush in much the same way that they would have received it from their parents' bills. Others have attempted to keep adult Petrels in confinement; but these birds appear to be unable to live long at a distance from the sea. The best plan of ascertaining whether Petrels are nesting in a locality is to induce a terrier to take up the search. The dog's keen olfactory nerves are certain to detect the musky odour which is inseparable from birds of this family. Indeed I owed to this circumstance my first introduction to the nesting habits of the Storm Petrel. It was when lunching on an Island frequented by Petrels, that I noticed a terrier scraping at the surface of the little brae of green turf on which we had sat down to rest, and discovered that we were sitting upon the habitations of the very birds which were the object of the days' quest. Persons well acquainted with Petrels prefer to hunt for them in the evening, when the birds break the long silence of the hours of daylight, and awake to the business and pleasures of the night season. It is always difficult to render the cries of sea-birds in writing; but the peculiar breeding note of the Storm Petrel is well expressed by Messrs. Harvie-Brown and Buckley by the syllables "ti-tee-tik," repeated several times in succession. I have never heard this Petrel utter any note upon the wing,—It is when the birds are underground that they cry to one another. When the duties of reproduction have been completed, the Petrels of all ages return to a pelagic life,—traversing the ocean in all directions in search of food. The stomachs of those which I dissected in the breeding season contained nothing but pure oil, which a living bird always endeavours to eject when held in the hand. They appear to feed upon small shells, the otolites of fishes, and such oily substances as these birds can find floating upon the surface of the waves. The late Mr. Rodd stated that this Petrel was frequently to be seen flying and hawking about in pursuit of small insects in fine summer evenings in Mount's Bay,—“sometimes dipping, but seldom alighting on the sea, skimming for a few seconds with open wings, and mounting again in the air.” Such Petrels as I have examined in a fresh state in autumn and winter always proved to be absolutely empty, being birds which had allowed themselves to be caught in the centre of an Atlantic hurricane, and driven from the open ocean to take shelter

on the coasts of Great Britain. The late Mr. Booth considered that this Petrel was common all round the British Isles, though seldom observed except by seafaring people. "I have often noticed," he writes, "these poor little birds terribly distressed by the buffetings they receive during a protracted gale, at times hovering and settling among the breakers, and occasionally being carried before some blinding squall, almost helpless, inland. After a storm of several days duration in November, 1872, I observed scores of these birds resting on the water a few miles off the coast of Norfolk, apparently thoroughly worn out, with their heads buried in their feathers. On visiting one of the lightships, I learned that several of the Stormy, as well as a single specimen of the Fork-tailed Petrel, had come on board while the gale was at its height" ("Descriptive Catalogue of Birds, p. 199"). That birds of this species should occur on lightships during the raging of winter gales seems natural enough, when we remember the dazzling force of the rays that stream through the surrounding darkness. Even during the summer nights, the fishermen who ply their trade off the coasts of Sicily find that the bright lights which they carry frequently attract Petrels to their fishing crafts.

The Storm Petrel has no near ally in the Old World. Its nearest relative is *Procellaria tethys*, which frequents the West coast of Central America.

The Storm Petrel has the head and back grey-black; the margin of the greater wing-coverts greyish white; rump and upper tail-coverts (except their black tips) white; rectrices sooty black, white at the base, the shafts black; throat, breast, belly and under tail-coverts black; sides of the vent white. The mandibles, legs and webs black; irides dark hazel. The bird of the year is fresher in colour than adults, and often retains some flakes of nestling down upon the abdomen. The adult measures about 6.5 in length; wing, 4.7; tarsus, 0.9.



FORK-TAILED PETREL ♀

*Family—PROCELLARIIDÆ.**Subfamily—PROCELLARIINÆ.*

FORK-TAILED PETREL.

Oceanodroma leucorhoa (VIEILL.)

THE Fork-tailed Petrels of the British list belong to a well-known genus, embracing ten or eleven distinct species of Petrels. But only two of the number have been obtained hitherto in the European seas, and of these one is a recent addition to our insular avifauna. The single species which has long been recognized as a visitor to our coasts is the blue-glossed Fork-tailed Petrel which Bullock procured at St. Kilda eighty years ago. Dr. Leach purchased Bullock's specimen at a time when only three other examples of this Petrel were known to collectors. Hence the present species is often referred to as "Leach's Petrel." Modern research has proved that this form of Petrel possesses a very wide range, including the temperate portions of both the North Atlantic and Pacific oceans. It generally occurs far out at sea; but Turner met with many individuals of this Petrel while travelling among the Aleutian Isles. It is taken by native seal-hunters off the coast of Alaska. Stejneger did not find this Petrel, himself, on the Commander Isles; but he states that it certainly breeds upon Copper. Island, in company with another species of Petrel. It resorts to the Kurile Isles for the purpose of reproduction. David does not record it from China, but it visits the islands of Japan. It re-appears in the North Atlantic, occasionally straggling to Greenland whence Helms reports a specimen obtained on the 13th of October. It occurs numerously upon the coast of Labrador, and breeds upon islands in Fundy Bay, Nova Scotia, thence it travels along the coast to Virginia, and, turning eastward, strikes upon the Bermudas, whence its ocean line travels across the Atlantic to Madeira. Entering the Mediterranean, it reaches the coast of Sicily, since a male bird was obtained near Syracuse in the month of July. It has often been taken upon the coast of Provence in the middle of winter. It is said to be of rare occurrence in the Straits of Gibraltar; those which Favier procured were all picked up dead after storms. Yet the Lisbon Museum has specimens from at least three home localities, and many specimens have been obtained on the open coast at Cape Mondego. This bird was originally described from a French specimen; it is believed to be commoner on the coast of Nor-

mandy than has been generally recognized. It crosses the North Sea to touch Heligoland as a rare straggler, and wanders north to the coast of Norway. It seems to miss the Færoes. Its presence in Iceland has been reported by Mr. Pearson ("Ibis," 1895, p. 249).

The Fork-tailed Petrel spends the greater portion of its life on the high seas, far out of sight of land; but when the hurricanes of winter subside, this Petrel abandons its wholly oceanic mode of life, and repairs to remote and storm-swept islands for pairing purposes. It is nocturnal, or at least crepuscular, when ashore; preferring only to visit or leave its nesting burrow during the evening and early morning hours. It is described as sometimes nesting under ruined walls, as for example on North Rona; or, again, among the roots of trees, as on an island in Fundy Bay; or, exceptionally, in deep holes in steep basaltic rocks; but its favourite manner of nesting is to excavate a more or less winding burrow in soft mould, beneath a covering of green turf. This Petrel is social in a marked degree in the breeding season; hence we find that the headquarters of a colony of Fork-tailed Petrels consists of a large series of burrows, many probably untenanted, which literally honeycomb the slope or brae in which the birds are nesting. It is not known that the Fork-tailed Petrel breeds on any island off the coasts of England; it undoubtedly nests on the west of Ireland, since eggs have been obtained from the Blasket Isles, Co. Kerry. In Scotland, the late Captain Cameron informed me that he had found this Petrel breeding in the Island of Rum.

Mr. R. Gray, in 1867, referred to this Petrel as breeding on the Island of Mingalay in "holes and cracks in the dry peat on the tops of the cliffs;" but this is not accepted as applicable to the present time by Dr. MacRury, though he indicates that the Fork-tailed Petrel still occurs round the Barra coast, and "a few may be breeding in the southern islands." As long ago as 1847, the late Sir W. E. Milner found the Fork-tailed Petrel nesting on the Dune, at St. Kilda. At the present day the St. Kilda men anticipate the arrival of a Glasgow steamer by securing a few Petrels and their eggs, in order that they may be sold to visitors. The birds are often kept alive for several days, and many eggs are destroyed. Fifty years have elapsed since the St. Kilda men began to raid the Petrels, and for the last fifteen years the raids have been constant; so that it is surprising that the birds have not deserted their favourite strongholds upon the Dune. They are chiefly absent from the grassy braes above the sea, nor is this surprising, since the Puffins dominate the more accessible portions of the island. The breeding ground of the Petrels commences upon the fringe

of the area of which their strong-beaked neighbours have chief possession. The braes which are riddled with the tunnels of the Fork-tailed Petrels are composed of more peaty earth than the soil which the Puffins prefer, and are less abundantly clothed with growing herbage. The burrows vary in length from an arm's length to four or five feet. I believe that they are in great part excavated by the feet of the bird, which scrape away the loose soil dislodged by the mandibles. Half-a-dozen burrows are sometimes placed together within a few yards space. When I visited the Dune in 1896, for the purpose of obtaining a Petrel's nest for the Carlisle Museum, we failed to find any Petrels on the lower slopes; but my friend, the Rev. T. P. Hartley, had hardly reached the summit before his eye was arrested by a small patch of white. It proved to be the white rump of a Fork-tailed Petrel which was sitting in her subterranean nest, more open to the sky than is usual. It was interesting to see this beautiful bird freshly drawn forth from her hiding-place among the rocks. The beautiful blue gloss of her feathers far exceeded that of any of the autumn-killed birds which I had handled previously. The exquisite curve of the head and shoulders of this Petrel combined with the soft glance of her dark brown irides, to confer a rare charm on the little sea-bird so unceremoniously ushered into the dazzling light of noonday. Like most Petrels, the captive squirted up a supply of pure oil.

The single white egg of this Petrel is deposited at the end of the bird's burrow upon stems of dry grass, some eggs are laid upon the bare mould, but this is exceptional. The egg of the Fork-tailed Petrel measures about one inch and three lines. I procured a series of eggs for the Carlisle Museum from St. Kilda; these have the white surface varied with rusty red spots, which tend to become obsolete in the cabinet. The Fork-tailed Petrel commences to lay in the month of June, but fresh eggs are taken in July; it is probably the end of August before the young bird embarks upon a sea-faring life. Both sexes perform the duties of incubation, and the sitting bird is fed as I believe, by its mate which wanders far over the ocean in pursuit of its subsistence.

During the day the Fork-tailed Petrels remain silent in their retreats; but as evening approaches they become much more animated, and twitter loudly to their companions coming off the sea. The St. Kilda fowlers search for the Fork-tailed Petrels in the gloaming, being confident that the cries of the birds beneath their feet will be sure to betray their whereabouts. I have tried repeatedly to render the notes of this Petrel upon paper, but the task is a difficult one. Audubon compares it to the syllables "Pewr-wit," twice repeated in succession. This Petrel possesses the musky odour referred to in my account of the Storm Petrel. Mr. John Swinburn alludes to this *apropos* of the colony of Fork-tailed

Petrels on North Rona :—"As soon as we landed, I made straight for the place where the pilot said the Petrels bred. This turned out to be the spot where all the ruins are situated, namely, pretty low down on the grassy slope near the western end of the island. We were all soon at work hauling out large stones, and scraping with our hands, guided by the strong musky odour which pervaded the inhabited burrows, which run through and through the thick walls of the old buildings, the latter of which, mixed with earth and turf as they were, afforded unequalled facilities to the birds for the purpose."

With advancing autumn, the Fork-tailed Petrels quit their island homes and wander across the stormy seas either singly or in company of their fellows, pursuing their flight over the Atlantic rollers in search of the floating shells, tiny fishes and minute crustaceans which appear to supply their chief food. Turner remarks that the Eskimo name of this Petrel is "O ku ik," and signifies "oil-eater." The natives of the North Pacific assert that this bird skims the water for traces of oil which may have flowed from a wounded seal or whale, and that large flocks of them will follow the floating carcase of a seal for that purpose. The flight of this Petrel is extremely rapid, as we should expect to be the case from the form of its long, slender wings. It appears to be strong enough to weather the hurricanes of the Atlantic; or, rather, it probably adopts the custom common to many birds of the Petrel family, in hurrying from before an approaching gale to some undisturbed area of the ocean. Nevertheless, even the Fork-tailed Petrel is often overtaken by misfortune, and compelled to battle wearily against the forces of the maddened elements, until resistance becomes more and more difficult to sustain. On such occasions the exhausted bird frequently seeks shelter upon the estuary waters of the nearest coast.

But even the shelter of a river-mouth often avails the harassed bird to a very slight extent. I have watched the Fork-tailed Petrel when the bird has been driven into shallow estuary waters as unlike as possible to its customary path across fathomless depths of the ocean, and can vouch for the bravery with which the tempest-driven waif has turned its head resolutely to head the prevailing gale, until driven back, time after time, by the pressure of the hurricane, the bird has at last abandoned its frail carcase to the ærial currents by which it was rapidly borne inland. The Fork-tailed Petrel has occurred in most parts of the British Islands. Sometimes its emaciated form is picked up in some ploughed field in the Midlands; sometimes it successfully crosses England, only to dash against the lantern of some light-ship in the German Ocean with fatal effect. This Petrel is of rarer occurrence upon the coasts of

Eastern Scotland than elsewhere in the British Isles. The sufferers from the untoward accidents of the autumn months are chiefly birds of the year, but not exclusively so. In September, 1891, a great number of Fork-tailed Petrels were driven upon the N.W. coast of England. I personally examined upwards of sixteen individuals procured inland or in the vicinity of the coast; these were adult birds and were deep in moult, a circumstance which perhaps re-acted unfavourably upon their staying powers. But the majority of the Forked-tailed Petrels which are picked up dead, or captured alive but worn out by their long abstinence from food inland, prove to be birds of the year. October is the month in which they occur most numerously. Many are taken between November and February, but captures between the end of February and the beginning of September are exceptional.

The great irruption of Fork-tailed Petrels to Ireland in 1891 occurred between the 27th of September and the middle of October. Mr. Williams, of Dublin received no fewer than twenty-seven for preservation at that time, and his birds, like those which I examined in the North-west of England, proved to be deep in moult, as well as much emaciated.

The adult male of the Fork-tailed Petrel is greyish black above when in fresh plumage, and, if in fine condition should possess a steel-blue glint upon the feathers of the upper surface; the forehead is rather paler; the greater and median wing-coverts are pale sooty brown; the longer tail-coverts are white with dark shafts, the shorter coverts sooty with white margins; the rectrices are sooty with the basal portion of the shafts white; the breast is sooty brown; the under tail-coverts are white at the base. The total length of my specimens varies from seven and a half to eight and a half inches. I can find no external differences between the sexes, but young birds of the year appear to be distinguished in autumn by the pale margins of their wing-coverts. The plumage of this Petrel becomes dull and faded at the end of the breeding season. The colours of the soft parts do not vary, the irides being constantly dark brown, and the bill and feet uniform black. The nestling in down is covered with long and delicate flakes of the softest possible down,—not “sooty” in colour as has been stated but of a delicate grey hue. In July and August 1895, I received two freshly skinned Petrels in down from St. Kilda. The bills of these tiny creatures were prominent, and exactly similar in external form to the mandibles of the adult. One of these specimens had been ruined by the discharge of oil ejected by the bird, but the other was in good condition, and proved a welcome addition to our series of British Birds in the Carlisle Museum.

Family—*PROCELLARIIDÆ*.

Subfamily—*PROCELLARIINÆ*.

MADEIRA STORM PETREL.

Oceanodroma cryptoleucura (RIDGWAY).

THIS near ally of the Fork-tailed Petrel was first described from the Hawaiian Isles, but is now known to range from the Galapagos in the Pacific to the Cape Verde Isles, St. Helena, Desertas, and Great Salvage Isles. It owes its entrance into the British list to the occurrence of a single specimen obtained at Littlestone, Kent, December 5th, 1895. Mr. Boyd Alexander and Mr. Ogilvie-Grant have explored the Madeiran and Cape Verde haunts of this Petrel (see "Ibis" 1896, pp. 53-54; *ib. cit.* 1898, p. 98.) This Petrel burrows in the ground, its nest-holes being more tortuous and deeper than those of the Frigate Petrel. It lays a single white egg, "with an indistinct zone of light red, and faint purplish underlying dots round the larger end." The bird closely resembles the Fork-tailed Petrel, but has the tail nearly square, the outer feathers being only slightly longer than the middle pair, the basal part of the outer feathers is white, and the upper tail-coverts are white, tipped with black, instead of uniform white (Ogilvie-Grant.)

Family—*PROCELLARIIDÆ*.

Subfamily—*OCEANITINÆ*.

WILSON'S PETREL.

Oceanites oceanicus (KUHL.)

THIS long-legged Petrel owes its trivial name to Alexander Wilson, by whom it was erroneously identified with the Storm Petrel. It is a common species on the American coasts, at least as far north as Labrador. Though rare



WILSON'S PETREL ♂

in our own seas, it has occurred as a straggler in Cornwall, Devon, Wilts, Hants, Sussex, Suffolk, Yorks, Lancashire, and Cumberland. In Scotland it remained undetected until 1891, when a living bird was entangled in a net near the sea at Inner Jura, on the 1st of October. This specimen was found alive, and was taken to Mr. Henry Evans, who at once recognized its identity. Almost at the same moment two Wilson's Petrels were procured in Ireland. Of these, one, a female, was caught in an exhausted state in a stubble-field in Co. Down, on the 2nd of October. The other was shot on Lough Erne on the 1st of October. Wilson's Petrel has been procured on the coasts of France and Portugal. It enters the Mediterranean; for it has been obtained near Malaga and at Cagliari. It visits the Canary Isles, and is said to reside at the Azores all through the year. It frequents the Australian seas, and was found by the "Challenger expedition" along the Antarctic Ice-barrier. It was likewise one of the few species of birds obtained on the voyage of the "Dundee Whalers" to the Antarctic seas in 1892-3.

Our knowledge of the breeding habits of Wilson's Petrel is due to the researches of the Rev. A. E. Eaton, who found it nesting in Kerguelen Island. It frequents the land in large numbers as early as November, but does not appear to begin to lay until January. The birds present great adaptability in their choice of nesting quarters; some individuals elect to rear their young a few feet above high tide-mark, others withdraw to the shelter afforded by the large boulders which are found on the sides of the hills in the interior. The single egg is dull white, usually zoned at the larger end with minute purple-red spots. It is laid in a cavity of the rocks or under a pile of stones, but always on the bare ground, either in a natural depression or a slight hollow formed by the birds. The birds can be located at night by their cries; it was by searching for them with a lantern that Mr. Eaton procured a series of eggs. The birds cease to cry if disturbed by any noise, so that great care is required to find them in the dark. Mr. Eaton sometimes marked the supposed breeding places at night with piles of stones, and returned next day to complete the search. The birds frequent their nesting places for some weeks before they begin to lay. After the young are reared, the Wilson's Petrels return to a pelagic existence.

Layard, who studied this Petrel on the African coast, states that it consorts freely with its congener the White-bellied Petrel, "flitting over the waves and picking up odd bits flung over the ship's sides. When taken in hand they disgorge large quantities of an oily matter, which quickly congeals, and assumes the appearance of dirty lard. Mr. Rickard records it from the neighbourhood of East London, and Mr. Anderson gives the following note: 'This bird is not

unfrequently met with off the south-west coast of Africa, as well as in many of the bays and inlets. I have occasionally seen it very abundant about the fisheries at Walwich Bay and Sandwich Harbour, where these birds would approach within a few feet of the fishermen, eagerly picking up the smaller particles of refuse thrown away by them whilst cleaning their fish on the shore'” (“Birds of South Africa,” p. 765). The late Mr. Seebohm considered that Wilson’s Petrel was to be met with commonly in the Atlantic, especially near the American sea-board. “They fly very much like Swallows, and neither rain nor wind seems to interfere with their movements. In stormy weather they took little or no notice of the ship. We generally saw them in pairs; now and then a solitary bird was to be seen; seldom more than three or four were together, but on a few occasions we saw as many as twenty. In fine weather with a gentle breeze they were much more abundant, and the greater number followed in the wake of the ship.

“It was astonishing how suddenly the scattered birds collected in a mass like a swarm of bees when garbage was thrown out of the ship; they were down upon it in a moment from all points of the compass; some alighted at once upon the surface, others hovered over the tempting morsels with uplifted wings and extended feet. They can fly with great rapidity, now skimming over the waves with extended wings, now turning suddenly, or changing their course capriciously, with uncertain bat-like or butterfly-like motion. We never saw them dive, nor did we ever hear them utter a note.”

Wilson’s Petrel has the upper and lower parts sooty black; the upper tail-coverts and the outside lower tail-coverts in the specimens before me are white; the wings and tail are dull black, but the greater wing-coverts are edged with grey. It can be distinguished from any other British Petrel by the great length of the legs, and by the yellow patches on the webs. It measures about seven inches, but varies in size remarkably. A Wilson’s Petrel which I obtained from Walney Island in November, 1890, is very little bigger than a Storm Petrel, the wing only measuring 4.9 inches. “Besides its small dimensions, the Walney Island bird has a square tail, but this varies, some specimens having a slightly forked tail, others nearly or quite even. The yellow mark on the webs of the feet is not nearly so well marked as in the ordinary form. The amount of white on the rectrices and on the under tail-coverts is about the same as in the rest [*i.e.* the Brit. Mus. series.] The plumage generally is dark, due to the recent moult” (O. Salvin, *in lit.*).



FULMAR 7

*Family—PROCELLARIIDÆ.**Subfamily—OCEANITINÆ.*

FRIGATE PETREL.

Pelagodroma marina (LATH.)

ORIGINALLY discovered during Captain Cook's first voyage, and procured in lat. 37° off the east coast of South America, this long-legged Petrel breeds on the Salvage Islands, Cape Verde Islands, and off Cape Leewin, South-west Australia. It ranges over the southern seas, and has occurred on the coast of Massachusetts, as well as in Western Britain. In November, 1890, a Frigate Petrel was washed up on Walney Island, and this I placed in the Carlisle Museum. On January 1st, 1897, a second specimen was caught alive on Colonsay, and this Mr. W. Eagle Clarke secured for the Edinburgh Museum. The Frigate Petrel has most of the upper parts slaty-brown, becoming paler and greyer on the back; rump and upper tail-coverts clear grey; tail and wings brownish-black; forehead, an elongated superciliary stripe and lower parts pure white. Total length about 8 inches; bill 0'9; tarsus 1'6.

*Family—PUFFINIDÆ.**Subfamily—FULMARINÆ.*

FULMAR.

Fulmarus glacialis (LINN.)

THE Fulmar is one of the most characteristic of Arctic birds. It breeds gregariously in Spitsbergen. Dr. Nansen met with it when he was approaching Franz Josef Land over the ice from the North-east. Mr. W. S. Bruce found a colony of Fulmars established at the east end of Mabel Island. Messrs. Pearson found Fulmars on the coast of Novaya Zemlya and Lutkë's Land.

When crossing the Kara Sea in the autumn of 1895, Mr. H. L. Popham observed a Fulmar in lat. $74^{\circ} 8' N.$, and long. $77^{\circ} 40' E.$ The Fulmar does not appear to have been obtained on the northern coasts of Siberia; but it has long been known to be present in vast numbers in Bering Sea, and especially among the islands of the North Pacific. Thus Stejneger states that the Fulmar is one of the commonest summer visitors to the Commander Isles, while Turner reports that hundreds of thousands of Fulmars, covering acres of water, are to be seen upon the coast of Alaska. The Fulmar breeds in vast numbers on the west coast of Greenland; two forms of the species are probably present. Mr. Hagerup observes that, on his voyages to and from Greenland, Fulmars were seen daily in greater or less numbers all the way from the Shetland Islands to within a few miles of Greenland. The Fulmar is abundant in Icelandic seas, and breeds in huge numbers on the Westmann Isles in the south, as well as upon Grimsey in the north of Iceland, to say nothing of lesser breeding colonies. In the Færoes the Fulmar has been established as a breeding species for upwards of sixty years.

In 1878, the Fulmar became established as a breeding bird upon the Island of Foula; its desire to increase in Shetland seas was further evinced by the discovery that no fewer than thirty pairs of Fulmars had nests on the south-westerly face of the Horn of Papa Stour in 1892. Again in 1896, Mr. Godfrey found a small colony of Fulmars, consisting of six birds, on the north face of Calder's Geo, in Eshaness. The Fulmar has been reported from the west coast of Skye, and I happen to have evidence that isolated specimens have occurred in Skye on several occasions; but though the late Dr. Dewar once shot a Fulmar on the coast of Skye in summer, there was never any ground for poor Gray's erroneous statement that Fulmars bred on a stack near Glenbrittle. The species of Petrel which actually nested on the stack in question, was undoubtedly the Manx Shearwater (*Puffinus anglorum*). But rarely as the Fulmar is seen *inside* the Outer Hebrides, it is quite possible that this species is augmenting its colonies on the north-west coast of Scotland. In 1887, for instance, Mr. Harvie-Brown found a number of Fulmars flying along, and alighting upon, the cliffs of North Ronay; while, in 1897, Mr. W. Eagle Clarke discovered several Fulmars in the immediate vicinity of Cape Wrath, under circumstances which pointed to a *mainland* breeding station.

The most classical haunt of the Fulmar in Western Europe must be looked for where the grey rain-clouds of the Atlantic roll over the heights which rise in weird and striking outline above the bay at St. Kilda. It is here that the Fulmar has nested in unbroken sequence for many centuries; here, too, that the pursuit of this fine Petrel has afforded opportunities for the perfection of the art

of fowling. The various bird-colonies which tenant the lonely stacks around St. Kilda possess sufficient diversity to delight the eye of the most experienced naturalist; but the species which will attract attention from the majority of strangers is no other than the Fulmar Petrel. In 1886, and again in 1896, we crossed the Minch from the rocky headlands of Skye, and passing through the Sound of Harris with the earliest morning light, steered across the Atlantic rollers towards the famous rendezvous of the beautiful birds which join the steamer about ten miles off the coast of the Long Island. Fulmars do not usually attach themselves closely to the stern of a vessel, like birds of the Gull family; but glide along in sweeping circles, flying to and fro the vessel. The flight of the Fulmar is more rapid than that of any species of *Larus* known to me. Moreover, the Fulmar appears to rise or fall in the air without the least effort. Should the wind stiffen to a half-gale, the Fulmar is not discomforted. One marvels to observe the exact precision with which the Petrel steadies its flight, when returning home in the teeth of the wind. The wings are long in proportion to the size of the bird, enabling a Petrel to leave a vessel far behind in a few moments, and bearing it swiftly over the troughs of the waves. The Fulmar may frequently be seen to stoop towards the sea and dip its feet in the smooth water in the wake of the steamer which it is accompanying. A charming scene is created by the actions of a flock of thirty or forty Fulmars, when these birds have alighted in the hollows of a heaving tideway, and are clustering together in the hope of some scraps being thrown overboard. A good idea of the voracity of the Fulmar may be obtained by securing the tail of a herring, or some similar substance, to a line released in the stern of the steamer. The Fulmars, if hungry, will swoop upon the offal with the greediness of a pack of hounds. Moreover, they can strip any but the toughest substances off a hook, if one is provided. Whether observed when curvetting backwards and forwards across the open main, or when swimming on the crest of the long roller, the Fulmar never fails to present an attractive appearance, the snow-white head and breast affording a pretty set-off to the grey mantle. When seen in flight—I have known a Fulmar to fly close alongside of the deck and take a careful investigation of the passengers, though these birds generally keep at a safe distance—this Petrel appears to carry the head drawn in close to the shoulders, while the white tail seems to be rather short in proportion to the alar expanse of the bird; the strongly-hooked beak is easily distinguished at a glance. The wings, when fully extended in flight, show the inner webs of some of the feathers as light-coloured or white patches in the centre of the grey tone of colour which pervades the upper surface of the wings. When at length we weigh anchor in the famous

Bay of St. Kilda, many more Fulmars come into sight; for these birds breed upon the rocky escarpments of the Dune, as well as upon the grassy ledges which traverse the towering precipices at the back of the main island. The Fulmar is not resident at St. Kilda throughout the year, since its wandering habits induce it to rove far and wide like a veritable sea rover at all such times as it can spare from the duties of reproduction. But during the spring and summer months the species is represented at St. Kilda by thousands of birds. Both the eggs and birds, old and young alike, are of great assistance to the tenants, who follow the Fulmar into the most difficult places in the rocks. For the Fulmar is a rock-dweller, and fixes its retreat in precisely the position that is least accessible to those who are likely to endeavour to plunder its nest.

The breeding season of the St. Kilda Fulmars probably commences much earlier in the year than that of such individuals as nest in high latitudes. The nest of the Fulmar is a slight scratching or hollow on a shelf of rock or bank of turf, and difficult to reach. Mr. C. Kearton assured us, when at St. Kilda in 1896, that he had newly climbed to about fifty nests of the Fulmar, and he noticed that nearly every nesting-place—the birds often nest within a yard or so of their next neighbours—was lined with small fragments of rock, which had apparently been carried there by the parent bird. In two or three cases the egg was deposited upon the bare ground or rock, with only one or two chips on the outside. Macgillivray described the Fulmar as only nesting on grassy shelves of the precipices, and lining the nest with dried grass and withered tufts of sea-pinks, and as he spoke from a personal descent of the cliffs, his experience must be perfectly reliable, relating no doubt to the Fulmar-preserves upon Connacher, where I also observed Puffins breeding; the precise nature of the lining of the nest therefore varies with the situation. The first eggs are laid about the middle of May; many of these are taken for food, though whether a bird which has been robbed lays a second time in the same season does not seem to have been positively ascertained. All the eggs that I ever saw at St. Kilda were of a dirty white, and measured about three inches in length. The Rev. M. A. Mathew informs me that he once obtained a red variety of the egg of the Fulmar, from among a number that had been taken in St. Kilda. The period of incubation required by the egg of the Fulmar does not appear to have been recorded as yet. It has been estimated as occupying a month and as extending to eight weeks; the truth probably lies between these two surmises. Macgillivray found young birds only a day or two old on the 30th of June, while I obtained young birds in down, apparently from two to six days old, upon the 10th of July; so that the beginning of July may be taken as approximating

fairly to the time for eggs laid about the middle of May hatching out. The young remain in a helpless condition for many weeks. Indeed I question whether the birds hatched at the beginning of June would leave their nests much before the end of August. In 1895 I received four newly-skinned nestlings of the Fulmar from St. Kilda on the 9th of August, birds which had been taken after the first of the month. These were nearly full-sized nestlings, and their wing quills were in course of development; but three of the number were entirely enveloped in nestling down, with the exception of the pinions. The fourth specimen had lost about one-third of its downy covering, and was feathering rapidly, so that it would no doubt have flown a little earlier than its companions in misfortune.

Fulmars are squat balls of feathery down in early youth; but the outline of an adult Fulmar poised upon some projecting pinnacle or crag is finely curved, and very unlike the stuffed specimens of the Fulmar which are to be seen in most museums. No doubt the Fulmar is most at home when sailing through the air on widely out-stretched pinions; but it is also a pretty bird when seen floating in a ground swell. Mr. Trevor-Battye made some interesting observations upon a Fulmar colony which exists in Eckman Bay, Spitsbergen. "Here," he writes, "numbers of them are always on the water, and washing constantly. I know of no bird that prolongs its bath as the Fulmar does; and while this is going on they are so engrossed as allow a boat's crew nose almost to touch them before they move away." In the northern regions the Fulmar feeds largely on the flesh of dead seals and cetacea; hence such immersion of the plumage as Mr. Trevor-Battye witnessed may well be needed to cleanse the feathers of the bird from grease and dried gore.

Another point which struck Mr. Trevor-Battye as novel was the cry of the Fulmar, which he never heard on the wing, though he says that when the Fulmar is at rest on the water it frequently utters a complacent croak. I have only once heard what I supposed to be a Fulmar's cry. I was resting upon the rocks on the side of the Dune, when suddenly a curious guttural croak came speeding through the air, and, looking up, I saw a Fulmar passing over. This was probably the note which Mr. John Young described to me as sounding like "*Kaka*," twice repeated. Friderich says that the Fulmar, when pairing, employs a cry which he syllables as "*kekerek-i*;" in the evening, and during the night, another call-note is uttered, which he syllables as "*wib, wib, uä uä*." Stejneger states that he spent hours under the rookeries of the Fulmars of the Commander Isles, "listening to their whinnying voice, and watching their high and elegant flight in sailing out and in and around the cracked rocks like bees

at an immense bee-hive." Mr. Trevor-Battye has seen Fulmars "streaming" up an inland valley on their way across Spitsbergen; but the movement was only local, being undertaken in order that the birds might cross from one fiord to another. Nevertheless it proves that the Fulmar has not such a repugnance to leaving the sea and traversing dry land, as has often been conjectured.

The Fulmar, like the Arctic or Richardson's Skua, may be said to be dimorphic. All the birds that I ever saw at St. Kilda were grey-mantled birds, the pearly feathers of the back being often mixed with brown, and the head and lower parts pure white. But a beautiful specimen which was obtained on the Solway Firth a few years ago, and which can be seen in the Carlisle Museum, belongs to the second or grey form, in which there is no white breast, but the head and lower parts are of a light blue-grey. Both forms occur in northern latitudes. The Fulmar measures about 19 inches in length; wing 13 inches.

Family—PUFFINIDÆ.

Subfamily—PUFFININÆ.

GREAT SHEARWATER.

Puffinus gravis (O'REILLY.)

THE Great Shearwater is a widely distributed Petrel. It summers as far north as Greenland, but is believed to spend our winter at the Cape of Good Hope and the Falkland Isles. Its egg is unknown. The bird is essentially pelagic, seldom venturing near land, though common on the fishing banks off the Eastern United States. It has been obtained repeatedly in the Færoes between June and November. It has straggled to Iceland, Norway, Heligoland, and the east coasts of Great Britain. At certain times it appears in great abundance off the south-west coast of England. Most of the British specimens of this Shearwater are procured on the coasts of Cornwall and South Devon. Though rare in Ireland



GREAT SHEARWATER ♂

it is sufficiently frequent to have obtained the name of "Hagdown" in the west. Its presence on the western side of Scotland was first ascertained in July, 1885, when I chanced to find a derelict Great Shearwater on the shore at Lowergill, Skye. Another was obtained at Tìree, in October, 1892. Two years later, Professor Newton and Mr. H. L. Popham independently met with *many* Great Shearwaters off the Butt of Lewis and North Rona. Again, in 1895, Professor Newton counted fifty Great Shearwaters between Barra Head and St. Kilda. He searched for the species in 1896 as vainly as I did myself; but better luck befel Messrs. Barrington and Harvie-Brown, for they discovered numbers of Great Shearwaters off Rockall, in June. These birds were met with both singly, in flocks of their own kind—numbering as many as forty birds—and also mingling with vast flocks of Manx Shearwaters. A specimen, shot by Mr. Harvie-Brown, proved to be in moult, having many feathers in various stages of growth. This coincided with Mr. Popham's experience, that the Great Shearwaters which he saw in the summer of 1894 were adults which could not fly, having apparently moulted out their primaries. The late Mr. E. Hargitt possessed a Great Shearwater taken in Greenland on the 28th of June, which had the "outer primaries in their sheaths and undeveloped" (Saunders).

It is obvious that the Great Shearwater is unlikely to breed in its moulting season. The foregoing facts tend to disprove the view of earlier naturalists, that the Great Shearwater breeds in the northern hemisphere. Moreover, Captain Collins, who has a special acquaintance with the Great Shearwater, states that this Petrel arrives on the American fishing grounds only at the end of May. Large flocks usually arrive at the end of that month, and there remain, though they occasionally appear to be scarce at midsummer; having no doubt scattered over a wide area of the Atlantic. Collins believes that this Shearwater breeds during our winter: "having opened many hundreds of these birds, he has never found their sexual organs in a condition that would indicate that they were incubating." The ovary and oviduct of the female Great Shearwater shot by Harvie-Brown at Rockall were examined by Dr. Gadow, who decided that the bird had not bred and would not have bred within the year. Mr. Henry Evans, of Jura, who has visited St. Kilda in his yacht on so many occasions, states that Neil Ferguson and other St. Kilda fishermen were fishing a mile or two west of St. Kilda, on the 7th of August, 1897, when they noticed a Great Shearwater on the water near the boat. A quantity of ling's entrails were thrown over. The Shearwater hurried to the feast and was felled with an oar. "Ferguson thinks that this Shearwater breeds on the Dune, because the bird has been obtained there before, and because also there was a bare nesting-patch on the breast of the specimen captured, 'the

same as is to be seen on the Fulmars.' A very fair skin was made of the bird, which I have presented to the collections in the Museum of Science and Art, Edinburgh. I have identified probably two hundred or two hundred and fifty Great Shearwaters in western Scottish waters, but saw none there during the present season" ("Ann. Scot. Nat. Hist." October, 1898, p. 238).

The chief food of the Great Shearwater is the squid; but it also captures fish, and devours the offal thrown over-board by fishing boats. The late Mr. Seebohm considered that the Great Shearwater was much more local in the Atlantic than the Fulmar or Wilson's Petrel. "Sometimes half a dozen may be seen together, but more often they are in pairs. Compared with the Fulmars they look very black, but as they turn so that the sun shines upon them, they look brown against the blue waves. Their under parts look almost white, but as they skim up from the waves, the brown edges of the under wing-coverts can easily be seen. The white on the upper tail-coverts is conspicuous in flight, and the neck is shortened so as to produce the appearance of a white streak behind the ear-coverts." The Great Shearwater has the crown dark brown; the neck nearly white; the upper parts brown, with pale edges to the feathers; primaries and tail blackish-brown; under parts white, varied with brown on the belly and sides of the breast; upper mandible grey, lower paler; tarsus, toes, and webs pinkish-white, a dark band traversing the outer surface of tarsus and outer toe. Total length about 19 inches; wing 13 inches; tarsus 2.4. All the measurements of Petrels vary in individual specimens.



MANX SHEARWATER ♂

*Family—PUFFINIDÆ.**Subfamily—PUFFININÆ.*

MANX SHEARWATER.

Puffinus anglorum (TEMM.)

THE Manx Shearwater appears to have escaped the attention of the earliest European Zoologists, notwithstanding the pains which were bestowed by Gesner and Aldrovandus upon the discovery and identification of rare or imperfectly known species of birds. Our countryman Dr. Caius sent to Gesner a drawing and description of the "*Puphinus anglicus*," which Aldrovandus improved into *Puffinus anglorum*; but the bird in question was the common Puffin (*Fratercula arctica*), and not the Shearwater. The transfer of the generic and specific names of the Puffin to the Shearwater was accomplished at a later date. The Shearwater was not overlooked longer than the middle of the sixteenth century, when specimens of our modern *Puffinus anglorum* entered the Repository of the Royal Society, and Tradescant's Museum. The range of this Shearwater has proved to be less extensive than those of some of its congeners. It appears to occur sporadically in most parts of the North Atlantic. According to Faber, this Shearwater remains on the Iceland seas all the year through; but it is most probably a summer visitor to Iceland, nesting chiefly in the south, as for example upon the Westmann Isles. Hagerup includes the Manx Shearwater in his Birds of Greenland, but we have no information that it nests on that continent.

It was supposed at one time to be a common visitor to the coast of the Eastern United States; but American ornithologists assure us that it is rarely obtained on their sea-board. Captain Savile Reid referred to the present species a Shearwater which had been captured while sitting on its solitary egg, in a rocky hole on the south shore of Bermuda; but without doubting the correctness of his identification, we must conclude that the event was an exceptional one. There is no other record of the Manx Shearwater nesting in Bermuda. Nevertheless, this Shearwater winters as far south as the coast of Brazil on the western side of the Atlantic. It is also reputed to nest in the Azores. Mr. J. J. Dalglish has recently recorded that the Manx Shearwater breeds in the Madeiran seas. Mr Ogilvie-Grant seems to have failed to find the Manx Shearwater at the

Desertas. Mr. Meade-Waldo describes the Manx Shearwater as sometimes numerous in the vicinity of the Canaries, but only in winter. The hundreds of Manx Shearwaters which Captain Reid identified off Teneriffe in March may well have been birds which bred in more northern latitudes. The Manx Shearwater does not appear to nest in Spain or Portugal, but many colonies are found further north; indeed the species ranges as a breeding-bird from the North-west coast of France to Shetland and Færoe. It is only a rare visitor to the coast of Norway, and is absent from the Gulf of Bothnia. Perhaps the most historical nursery of this Petrel was that which at one time existed on the Calf of Man.

“At the South end of the Isle of *Man*,” writes Willughby, “lies a little Islet, divided from *Man* by a narrow channel, called the *Calf of Man*, on which are no habitations, but only a cottage or two lately built. This Islet is full of Conies, which the *Puffins* coming yearly dislodge, and build in their Burroughs. They lay each but one Egg before they sit, like the *Razor-bill* and *Guillem*; although it be the common perswasion that they lay two at a time, of which the one is always addle. They feed their young ones wondrous fat. The old ones early in the morning, at break of day, leave their Nests and Young, and the Island it self, and spend the whole day in fishing in the Sea, never returning or once setting foot on the Island before Evening twilight: So that all day the Island is so quiet and still from all noise as if there were not a bird about it. Whatever fish or other food they have gotten and swallowed in the day-time, by the innate heat or proper ferment of the stomach is (as they say) changed into a certain oily substance (or rather chyle) a good part whereof in the night-time they vomit up into the mouths of their Young, which being therewith nourished grow extraordinarily fat. When they are come to their full growth, they who are intrusted by the Lord of the Island draw them out of the Cony-holes, and that they may the more readily know and keep account of the number they take, they cut off one foot and reserve it; which gave occasion to that Fable, that the Puffins are single-footed. They usually sell them for about ninepence the dozen, a very cheap rate” (“Ornithology,” pp. 333-334). Ray adds that, in spite of the low price which the Shearwaters fetched as food, “yet some years there is thirty pounds made of the young Puffins taken in the Calf of Man: Whence may be gathered what number of birds breed there.”

That the Manx colony of this Shearwater must indeed have been prodigious, becomes most apparent when we reflect that no fewer than nine thousand and six hundred nestlings were sometimes taken in a single summer. It is to be regretted that this memorable colony of Shearwaters, which flourished so

prodigiously in the middle of the seventeenth century, should have passed away almost unnoticed from our midst. The only record of its disappearance that I have been able to discover, is furnished by a private letter written from Jardine Hall on February 24th, 1836, by the late Sir William Jardine, who remarks: "I had almost forgot the Isle of Man. It is nearly nine years since I was there, we went as you observe to seek the Manks' Petrel, but were unsuccessful. The people said that it had certainly left the Calf several years previously, and if any number had been there we should not have missed them." But if the Calf of Man no longer supplies a home to this interesting Shearwater, it is still gratifying to remember that the bird has maintained its footing as a breeding species in another locality which it occupied in the reign of Charles II. according to Ray, whose information was that this Shearwater bred "not only on the *Calf of Man*, but also on the *Silly Islands*." Mr. J. H. Gurney and Mr. E. Bidwell both furnish us with particulars regarding the Shearwaters which inhabit Annet, one of the Scilly group. The local name there applied to the Manx Shearwater is "Crew." The birds honey-comb the ground of Annet with their burrows. The soil which covers the rocks is composed of peat and sand, in which the birds easily excavate their runs with their hooked bills (probably assisted also by their feet). Mr. Gurney estimated the strength of the Annet colony in 1887, at about two hundred pairs. Enormous flocks of this Shearwater, supposed to include many thousands, have been observed in the vicinity of the Scilly group; but of the forty islets which bear herbage, Annet alone is known to afford an asylum to the Manx Shearwater. It is probable that the great assemblages of these birds which have attracted attention locally were composed of individuals which had newly arrived from some other favourite haunt, such as Skomer Island on the Pembrokeshire coast. Mr. R. M. Barrington, who has visited many island haunts of this Shearwater, expresses the opinion that "Skomer is the greatest British breeding-place of the Manx Shearwater, and for its size perhaps the greatest in Europe" ("Zool." 1888, p. 371).

The Skomer Shearwaters excavate their burrows all over the island, which measures about four miles in circumference. The Puffin is generally considered to be hostile to any species of Petrel. Indeed, the extermination of the Shearwaters which formerly nested in the island of Mingalay has been accounted for by an invasion of Puffins into their favourite haunts. But Mr. Barrington had a different experience on Skomer, where these two species of sea-fowl are often found in the same burrows. In addition to the other islands on the Welsh coast which the Manx Shearwater frequents for breeding purposes, Mr. T. A. Coward discovered the presence of a small colony of Shearwaters on a steep, grassy cliff

of the Carnarvonshire mainland, between Pwllheli and Aberdaron. Crossing St. George's Channel, we find that the Manx Shearwater breeds on Lambay, the Skelligs, Rathlin, and other islets. The Manx Shearwater is not known to possess any breeding stations upon the East coast of Great Britain, but Orkney and Shetland, St. Kilda, Rum, Eigg, Skye, the Treshnish Isles and a few other islands of the Inner Hebrides can boast of nesting colonies. On the West coast of Scotland it is known by the Gaelic name of "Fachach," which is exchanged in Orkney and Shetland for the Norwegian name of "Lyre," by which it is also known in the Færoes, though the fowlers of the latter islands usually employ the term "Skrapur" to denote the Manx Shearwater.

My personal enquiries into the nesting habits of the Manx Shearwater were chiefly carried out in the Island of Eigg, which has long afforded shelter to this interesting bird. Perhaps the greatest number of pairs of Shearwaters make their burrows in a grassy shelf of the precipices upon the west side of the island, which formerly supplied an eyrie to the Sea Eagle (*Halæetus albicilla*); the cliffs here rise to a height of several hundred feet, and the Shearwater nursery could not be reached by the most experienced cliff-climber without a strong rope. The burrows which I have opened were situated on the grassy slopes above the cliffs on the North-east side of the island. Saxby states that the burrows of the Shearwater which breed in Shetland vary from eighteen inches to two feet in length; but this probably depends on the character of the soil.

Mr. W. Evans observes that the burrows of the Shearwater which he examined in Eigg were from four to five feet in length. The burrows that I examined could be probed to their extremity by my arm, and generally ran from right to left. The nest-burrows contained fibres and the stems of grasses, evidently gathered near the entrance. A single white egg is deposited near the extremity of the burrow. On one occasion I found two eggs in one nest-hole, but these had probably been laid by two different Shearwaters. Both sexes take part in the duties of incubation, as I ascertained by actual dissection. The eggs are laid from the end of May to the middle of June, and are usually far advanced in incubation by the end of the latter month, though I have found fresh eggs and young birds on the same day. The young generally hatch out about the end of the first week in July, and leave the nest-burrow during the latter half of August. During the breeding season the Manx Shearwater spends the hours of daylight either on the open sea or resting in its burrow, or cairn, among the high rocks. Possibly the Hebridean Shearwaters may be more diurnal in their habits than the birds which nest further south. At all events they are perfectly at home on the sea on any breezy day, and may be seen at

all hours between Ardnamurchan and the Sound of Rum, generally flying in irregular lines and sometimes alighting on the sea. I have studied the habits of these birds on many occasions, and lain in wait among the rocks in order to witness the return home, at dusk, of such individuals as have spent the day upon the sea. The noisy chorus produced by the cries of those returning home uniting tumultuously with the vociferations of their brooding partners must be heard to be believed. Any one who has occasion to invade the burrow of a Manx Shearwater in the nesting time should be prepared for a loud cackling and scolding from the owner, which is sure to employ its sharp bill as a weapon of defence. But the complaints of such an injured individual can convey no conception of the babel of voices heard when an entire Shearwater colony unites in a nocturnal concert. "The air," writes Mr. Barrington, "became alive with Shearwaters answering those underground, the rush of their wings as they sailed past with extraordinary swiftness would of itself have made a loud volume of sound, but when the night-air was filled with their cries in addition, it was indeed as if Bedlam were let loose. The note is always the same,—cuck-cuck-oo, generally repeated three times, and with a varying degree of loudness and harshness, or hoarseness, which is concentrated in the final 'oo.'" These strange cries are often heard by Highland fishermen when lifting lines in the vicinity of a Shearwater colony. But whatever the census of any particular breeding colony, the Manx Shearwater must always rank as one of our rarer seafowl. The food of the Shearwater consists partly of small squids, crustaceans, and other floating pelagic organisms. The Manx Shearwater does not usually associate on the water with any other bird; but I have seen large flocks of Manx Shearwaters and Herring Gulls mixed together, the birds clustering densely over the waves as they sought to glut their appetites on shoals of immature surface fishes. Dark spirits of the deep as Shearwaters usually appear to be while careering headlong over the waves, their sombre appearance becomes intensified by contrast with the white heads and pearl-grey mantles of a party of mature Herring Gulls. The Manx Shearwater like the Fulmar is an excellent diver, but it seldom obtains its food at any distance below the surface. Nor does it usually remain swimming on the surface of the water for any length of time, since it prefers to continue a restless flight across the trough of the sea all through the day, during which it must of necessity cover enormous distances. It is for this reason that the Shearwater is generally supposed to be much more abundant within certain areas than is really the case, since the same birds may be seen at many different points during the day. The Shearwaters do not literally shear the crest of the waves, but only skim their surface. Their

manner of flight is peculiar and dissimilar to that of any Gull, consisting as it does of five or six quick beats, followed by a graceful gliding motion. This exercise is varied by many beautiful curvettes, none usually executed over the sea at a greater probable elevation than some forty feet. Yet the birds which hover so closely over the bosom of the deep at times ascend in the air to an elevation of many hundred feet, as for example when the individuals which nest in the interior of Rum return to their well-nigh inaccessible burrows among the mountain-craggs of that island deer-forest. Their choice of so remote a breeding station is the more curious when we remember that some of the same birds nest on a grassy cliff immediately overhanging the sea upon the east side of the island.

The Manx Shearwater appears to be principally a summer and autumn visitor to our shores. Although I have handled numerous specimens in the flesh, and seen many hundreds in life, between May and October, I have never yet examined a Shearwater procured in Scottish waters during the winter months. The breeding birds leave their island resorts between August and October, and become veritable wanderers, journeying incessantly over the open sea, until a rising temperature inspires them to return to their summer homes. In autumn, and to a lesser degree in spring, they visit the east and south coasts of Britain on migration. It is at such times as these that strayed individuals are washed up dead on our foreshores, or stranded far inland. The title of "Mackerel-cock" is sometimes applied to this Shearwater by sea-faring men. The chick is at first invested with a covering of delicate grey down, which covers the entire surface except the breast, the down of which is usually white, or grey ringed with white. The nestling down is early replaced by a black and white garb, which is worn by adults and young indifferently. A nestling from Skomer, which still retains a patch of down upon the belly, has the crown and upper parts black; chin white; sides of the breast washed with grey; abdomen and under tail-coverts white, except the outer feathers, which are varied with black, which forms two black patches behind the thighs. An adult is similar, but purer in tint. The bill is greyish-black; irides dark-brown; tarsus pale grey, a black stripe shooting along the outer side of tarsus and outer toe; the remaining toes and webs grey, the latter tinged with black. The Manx Shearwater measures about 14 inches in length; wing, 9.5 inches.

*Family—PUFFINIDÆ.**Subfamily—PUFFININÆ.*

LEVANTINE SHEARWATER.

Puffinus yelkouanus (ACERBI.)

THIS Shearwater is the Mediterranean representative of the Manx Shearwater, and ranges over that sea from the Bosphorus and Smyrna to the coasts of Egypt, Italy, Corsica, and North Africa. As long ago as 1888, I pointed out that a Shearwater, which Mr. Howard Saunders had described as the young of the Manx Shearwater, belonged to some other species which occasionally visited British waters. It is now established that the Levantine Shearwater strays to the South-west of England; specimens from Torbay and Plymouth are in the Natural History Museum, and I found a third specimen in the Cambridge Museum. The Levantine Shearwater has the upper parts paler and browner than the Manx Shearwater, and the flanks and under tail-coverts are usually dusky brown. Length about 15 inches; bill 1·9; tarsus 1·8.

*Family—PUFFINIDÆ.**Subfamily—PUFFININÆ.*

DUSKY SHEARWATER.

Puffinus obscurus (GMEL.)

THE Dusky Shearwater nests in the Bahamas, Bermudas, Barbados, and other islands, and ranges over the tropical and sub-tropical seas of the whole world. It has twice visited this country. In April, 1858, a Dusky Shearwater was picked up dead near Bungay, Suffolk. A second specimen, procured in Devonshire, is in the Natural History Museum. The upper surface of this Petrel is nearly uniform slaty black; the white of the under surface reaches nearly to the orbit of the eye, where, as on the sides of the neck, the feathers are mottled; the under tail-coverts are blackish-brown, tipped with white; but the dark colouring of these coverts varies in extent in individuals. Total length about 12 inches; wing 7·8; bill 1·5; tarsus 1·5.

*Family—PUFFINIDÆ.**Subfamily—PUFFININÆ.*

GOULD'S LITTLE SHEARWATER.

Puffinus assimilis (GOULD.)

THIS Shearwater was formerly supposed to be peculiar to the seas of Australia and New Zealand, but is now known to nest at the Salvage Islands, Madeira, Deserta Grande, Porto Santo. It was added to the British list in 1853, when a single example boarded a sloop off Valentia, Ireland, on May 11th. Mr. R. Blackburn has presented this bird to the Dublin Museum. Gould's Little Shearwater is closely related to the Dusky Shearwater, but has the slaty black of the upper surface of a bluer tint than *Puffinus obscurus*; the white of the under surface extends over the lower part of the lores, and close to the orbit of the eye; the dividing line on the sides of the neck being more definite than in *Puffinus obscurus*; the under tail-coverts are pure white, instead of being largely mixed with dark sooty brown as in the Dusky Shearwater. It is also smaller, measuring about 10.5 inches in length; wing 7.4; bill 1.4.

*Family—PUFFINIDÆ.**Subfamily—PUFFININÆ.*

SOOTY SHEARWATER.

Puffinus griseus (GMEL.)

THIS Shearwater ranges over the southern seas, nesting in the Chatham Isles and elsewhere in the seas of New Zealand, but at other times wandering as far north in the Pacific as the Kurile Isles. It visits the coasts of



SOOTY SHEARWATER ♂

South America. Mr. A. A. Lane met with great numbers of this Shearwater on the coast of Chili on November 3rd, 1890. "From a distance they presented a remarkable appearance, numbers being settled on the water whilst the air above was full of them, flying in regular succession from the rear to the front of the column. On sculling out I found the line of those swimming was from a quarter to half-a-mile across. They were not swimming thickly together, but from one to three yards apart. I did not bag more than one to each shot I fired, as most of them were only wounded, and, as is usually the case, difficult to secure, and whilst I pursued one the rest got well away. The wounded birds on being hauled into the boat, attacked everything most ferociously with their bills, not only biting and worrying oars and cordage, but even each other, screaming and tearing out each other's feathers wholesale, so that before I got time to kill them outright some of them had nearly plucked the others. They varied in size, a male measuring 18.5 inches long. Bill, black; legs and feet lilac-grey on the inner parts, black on the outer" ("Ibis," 1897, p. 312). Mr. O. V. Aplin met with the Sooty Shearwater near the Castillo Rocks, off the coast of Uruguay, in October and June.

It visits the fishing grounds on the United States sea-board in small numbers, pushing as far north as Greenland during summer, which is *not* the breeding season of this Shearwater. A few individuals of those which summer in the North Atlantic wander westward to the Færoes, but, avoiding Norway, pass down the North Sea, far from land, occasionally entering the Firth of Forth, or striking the Yorkshire coast. A single straggler has been procured at Heligoland. Those which cross the German Ocean usually enter the Straits of Dover, whence they return once again to the wide Atlantic. A few specimens have been captured on our south-west coast; but this Petrel does not visit the Welsh coast or the Hebrides according to present information. It has been procured in Irish waters in a few isolated instances. It visits the coasts of France; but has only once been captured on the coast of Portugal, where the Great Shearwater occurs in some numbers annually, when returning to its breeding quarters in the South Seas. It is interesting to note that the Sooty Shearwater has been obtained on the French coast as early as June. It has occurred in Norfolk as early as July, but its visits to the British Isles are usually arranged for August and September, though it sometimes occurs as late as October and November. An adult taken at Tréport was secured after a great storm on the 11th of September; but these birds have generally been met with in our waters in fine weather.

Authenticated eggs of the Sooty Shearwater have been procured in the Chatham Isles. Dr. H. O. Forbes states that the eggs vary in form from ovate

to rotundo-ovate and oblongo-ovate. Colour white. The dimensions appear to vary from 2.7×1.82 to 3.2×2.0 . Buller states that he found nestlings of this Shearwater in their deep burrows on Whale Island in the middle of January, when black quills were sprouting through their thick mantle of slaty-grey down. Marchant found half-grown young in burrows near the summit of the Island of Kapiti about the end of February. This Shearwater agrees with most of its congeners in being largely nocturnal and very noisy during the breeding season. In its pelagic habits it appears to be similar to other Petrels. The Sooty Shearwater was formerly supposed to be the young of the Greater Shearwater. Mr. Ridgway proposed to separate the Atlantic form of the Sooty Shearwater from the Pacific form, but the late Mr. O. Salvin failed to see "how two species can be set up." The Sooty Shearwater has the upper parts sooty brown, darker on the head, lower back, wings and tail; under surface greyer; the throat and breast paler; quills dark sooty brown; under wing-coverts greyish white. Total length about eighteen inches, wing 12 inches; tarsus 2.4.

Family—PUFFINIDÆ.

Subfamily—PUFFININÆ.

CAPPED PETREL.

Æstrelata hæsitata (KUHL.)

THIS Petrel is a West Indian species, belonging it is supposed, to Haiti and Martinique, whence it has strayed on a few isolated occasions to the eastern coast of the United States, as well as to Western Europe. In the spring of 1850, a Capped Petrel was caught on a heath at Southacre, Norfolk, thus establishing its claim to be considered British. The adult has the crown dark brown, upper surface sooty brown; hind-neck, forehead, upper tail-coverts, breast and belly, white, with a few dark feathers on the flanks; margin of the wing and tail sooty black, with white shafts. Total length about 16 inches; bill, 1.7; tarsus 1.56.

*Family—PUFFINIDÆ.**Subfamily—PUFFININÆ.*

COLLARED PETREL.

Æstrelata brevipes (PEALE.)

THE usual range of this South Pacific Petrel extends from the Fiji Isles to the New Hebrides. It was originally discovered on the Island of Aneiteum, where it breeds in burrows on the wooded mountain-tops of the interior. It was added to the British list in the early winter of 1889, when a solitary specimen was shot on the Welsh coast between Borth and Aberystwyth. Mr. J. W. Willis Bund presented this bird to the Natural History Museum. Mr. O. Salvin figured this bird in the "Ibis," 1891, pp. 411-414, where a detailed account of its history will be found. This Petrel has the crown and hind-neck sooty brown, which gradually blends with the light grey colour of the back; wings dark sooty brown; tail greyish brown; face, chin, and throat, white. The colour of the under surface varies, some specimens being nearly white with a broken collar of grey on the breast, while others are grey from the breast downwards. Total length about 12 inches; wing $8\frac{1}{2}$; tarsus 1 inch.

*Family—PUFFINIDÆ.**Subfamily—PUFFININÆ.*

BULWER'S PETREL.

Bulweria columbina (WEBB AND BERTH.)

THIS Petrel is best known, perhaps, as a resident in the neighbourhood of the Canaries, Madeira, and the Salvage Isles; but it ranges northwards to the islands of the Japanese Empire, and, eastward, to the Sandwich Isles. Its claim to be considered a British bird rests upon the authenticity of a single specimen which was picked up near Tanfield, Yorkshire, May 8th, 1837. This Petrel is of a deep sooty brown, or black, above and below, with a greyish shade over the head and neck; the chin and throat are slaty-grey. Total length about 11 inches; bill 1.2; tarsus 1.05.

*Family—DIOMEDEIDÆ.**Subfamily—DIOMEDEINÆ.*

BLACK-EYEBROWED ALBATROS.

Diomedea melanophrys (BOIE.)

THE home of this large Petrel is to be found among the uninhabited islands of the South Pacific, such as Stewart, Auckland, Snares, Campbell, Antipodes, and Bounty Isles, whence the species often visits the coasts of New Zealand. It is of rare occurrence in the Atlantic, but has been taken shot in the Færoes. A solitary example, which was reputed to have lived on Myggenæs Holm for many years, was shot in May, 1894. It proved, on dissection, to be a female. In July, 1897, an exhausted specimen was caught on the Streetley Hall Farm, near Linton, Cambs., by a labourer named Barker. The general plumage of the adult is white, with a broad slaty-black streak on either side of the eye; back and wings brownish-black; interscapular region cinereous; tail dark slate, the webs of the outer tail feathers white. This Albatros measures from 26 to 34 inches in length.

RECENT ADDITIONS.

Family—SYLVIIDÆ.

Subfamily—SYLVIINÆ.

RADDE'S BUSH-WARBLER.

Lusciniola schwarzi (RADDE).

A SINGLE specimen of this Asiatic Warbler was shot on the Lincolnshire coast, on October 1st, 1898, by Mr. G. H. Caton Haigh. The summer home of this Warbler is found in Siberia and Northern China; it winters in Southern China and Burma. It was first described and figured by Radde ("Reisen Von Ost-Siberien," pp. 261-263. Taf. IX.). Radde's Bush-Warbler has the upper parts dusky olive-brown, with a buffy-white eye-stripe; underparts yellowish-white. Total length, about 5.6 inches; wing, 2.45 inches. The second primary is equal to the eighth, or intermediate between the seventh and eighth; the first primary is very long. The bill is short and thick, and wide at the base, much stouter than in any Willow-Wren (*Phylloscopus*). Colour of bill, horn-colour, the base, fleshy-white; legs and feet, fleshy-yellow; claws, brown. (cf. Oates, "Fauna of British India, Birds," Vol. I., p. 399; "Brit. Mus. Cat." Vol. V. pp. 128-129).

*Family—LARIDÆ.**Subfamily—LARINÆ.*

MEDITERRANEAN HERRING-GULL.

(Larus cachinnans).

A SINGLE adult specimen was shot on Breydon Water, near Great Yarmouth, on November 4th, 1886. It was identified in the flesh by the late Mr. Stevenson, of Norwich. It is now in the possession of Mr. Connop of Rollesby Hall. The Mediterranean Herring-Gull is common on the coasts of Southern Europe and North Africa, so that it may frequently visit the shores of Great Britain. The adult bird is readily distinguished from the common Herring-Gull by its darker mantle, and by having the orbital ring deep orange-red instead of yellow, and the legs lemon-yellow instead of flesh-coloured.

H. A. MACPHERSON.

ERRATA ET CORRIGENDA.

Page 2, line 9 from top, "*Aquinto cubital*" should be one word.

Page 2, line 13 from bottom, for "even" read "ever."

Page 14, line 9 from bottom, for "minature" read "immature."

Page 132, line 4 from bottom, for "building" read "breeding."

APPENDIX.

IN October, 1895, I received from Messrs. Brumby and Clarke the first intimation of the proposed production of "British Birds, their Nests and Eggs," enquiring if I would undertake the illustrations. Knowing that such a comprehensive work, containing not only figures of the Birds and their Nests *in situ*, but also additional coloured plates of the Eggs of all British Breeding Birds, and written for both the Scientific and popular world, could not fail to be of interest to all those who take even the smallest amount of interest in the avifauna of their country, I, therefore gave effect to their wishes by accepting the undertaking. At that time, however, I was busily engaged upon the illustrations of Dr. Butler's work on "Foreign Finches in Captivity," then in course of publication by the same firm. It was, therefore, six months later that I finished the last plate for that book, and immediately set to work upon the first plate for British Birds, in the Spring of 1896. From that time down to the present I have been daily occupied with the work, and it is with a feeling of some satisfaction that I have now completed the long, unbroken spell of labour, which, however, has been of very considerable pleasure for me to carry through. But the amount of work entailed in such an undertaking is very great, as the procuring and selection of all the specimens for figuring, amounting to many hundreds of skins, and as many eggs, has been entirely left to me.

I may mention that only three drawings out of the 318 plates of Birds are taken from mounted specimens, these being the Hawk Owl, Goshawk, and Capercaillie. The Hawk Owl is from a very fine specimen kindly lent me by the Rev. Murray A. Mathew, and set-up so admirably that the Late Lord Lilford considered it absolutely true to life. The Goshawk, from a specimen set-up by Mr. F. Doggett, accurately representing the manner in which this bird takes its quarry, while the Capercaillie is a modified copy of a fine, mounted specimen in the British Museum. All the plates excepting these three are from skins, combined, in the majority of cases, with sketches from life.

I will now take the opportunity of expressing my sincere thanks to all those who have so liberally and willingly lent me so many valuable specimens from their collections, and to some friends my especial thanks are due.

To Dr. E. A. S. Elliot and the Rev. H. H. Slater I am deeply indebted for their unlimited liberality of placing their fine collections at my disposal

For the specimens of the whole order of Anseres, I am equally grateful to Mr. John Cordeaux and Mr. G. H. Caton Haigh. And for the loan of many species I must offer my best thanks to Mr. J. H. Gurney, Mr. O. V. Aplin, The Hon. Walter Rothschild, Mr. Scott B. Wilson, Dr. A. G. Butler, Mr. Alfred Beaumont, and the Rev. H. A. Macpherson, and also I much appreciate the assistance I have received from Mr. W. Burton, of London; Mr. F. Doggett, of Cambridge, and Mr. H. W. Marsden, of Bristol, whose names are well-known for their skill in taxidermy.

All the eggs figured in the work (with the exception of the Guillemot's and Great Auk's) are from the collections of Dr. Butler, Mr. A. B. Farn, the Rev. Murray A. Mathew, and my own.

It is not only for the loan of specimens from the rich cabinet of the Rev. Murray A. Mathew that my sincere thanks are due, but for his untiring and valuable assistance in the selection of specimens most suitable for figuring; and also for many specimens I express my gratitude to Dr. Butler and Mr. Farn.

The remarkably fine Guillemot's eggs figured are from the wonderful varieties of this species in the possession of Mr. Hewett, of York, who most kindly sent me a large series of his choicest specimens to select from, and my thanks are likewise due to Mr. F. G. Middlebrook, for so obligingly placing at my disposal his beautiful specimens of Great Auk's eggs, which are now figured for the first time in colour, and which, I think, will form an interesting addition to the work

October, 1898.

F. W. FROHAWK.

The Publishers sincerely acknowledge their obligation to the Rev. H. A. Macpherson for his valued services in revising the proof-sheets of this work.

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