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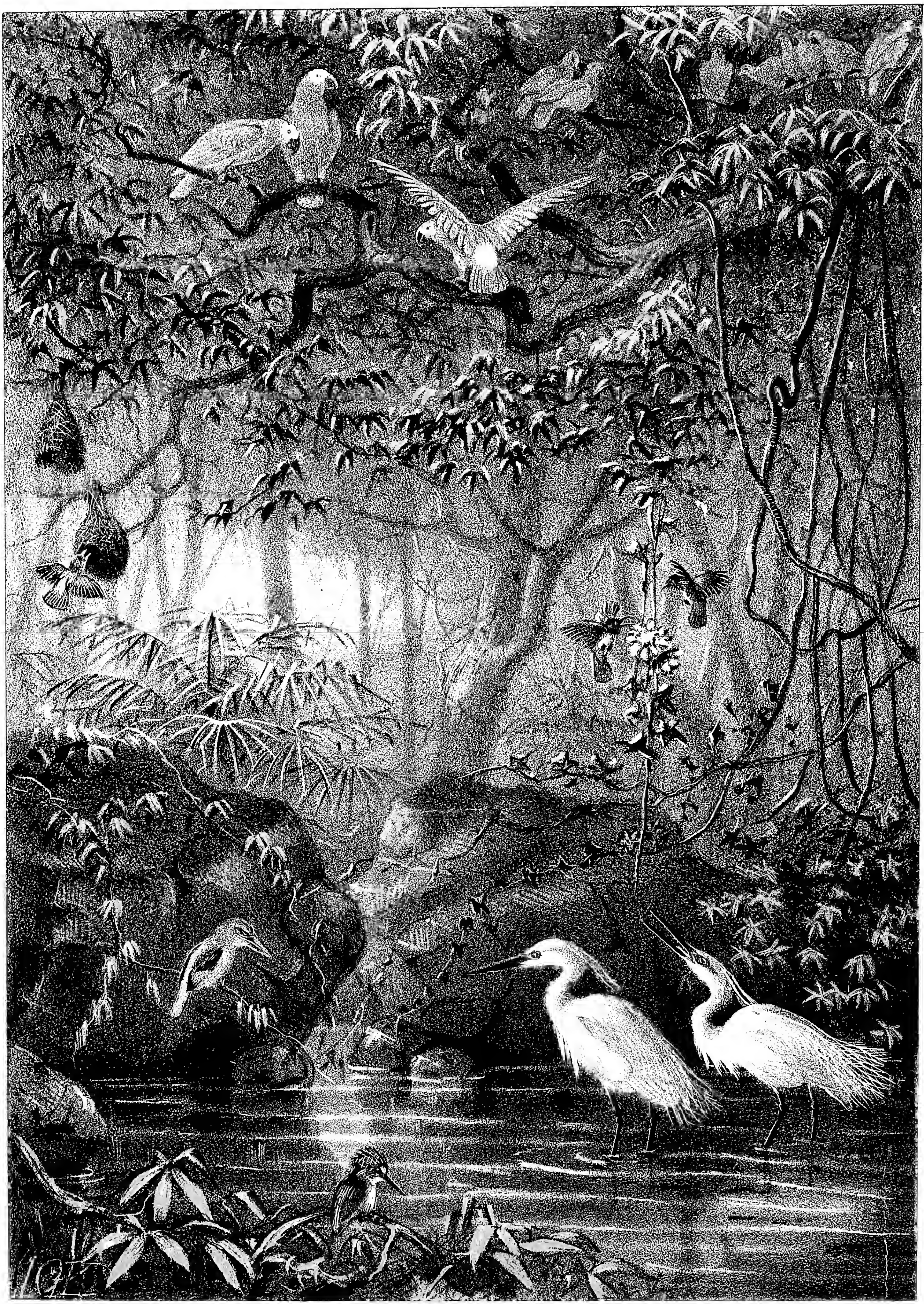

J G Keulemans lith

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BIRD-LIFE IN AN AFRICAN FOREST

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BIRD-LIFE

BEING A

HISTORY OF THE BIRD, ITS STRUCTURE, AND HABITS

TOGETHER WITH

SKETCHES OF FIFTY DIFFERENT SPECIES.

BY

DR. Alfred Edmund BREHM, 1829-1884.

Translated from the German

BY

Henry Matthew LABOUCHERE, F.Z.S.,

AND

William JESSE, C.M.Z.S., 1809-1871.

ZOOLOGIST TO THE ABYSSINIAN EXPEDITION.

ILLUSTRATED WITH TEN COLOURED PLATES, BY J. G. KEULEMANS.

LONDON:
JOHN VAN VOORST, PATERNOSTER ROW.

MDCCCLXXIV.

1874

1884

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Birds

Dedicated

TO THE MEMORY

OF MY

FATHER AND INSTRUCTOR

CHRISTIAN LUDWIG BREHM,

AN HONOURABLE

MAN NATURALIST AND PRIEST.

BORN THE 24TH OF JANUARY, 1787;

DIED THE 23RD OF JUNE, 1864.

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PREFACE TO THE TRANSLATION.

In bringing this work before the English public we have been actuated by the wish that it may fall into the hands of the general reader, and prove an indirect means of strengthening the now growing love of Nature and her ways in this country.

It is by a true appreciation of the wonders of Nature that the mind becomes expanded, the perceptions quickened, and the heart refined and softened. A more intimate knowledge of the beauties of Creation inevitably conduces to delicacy of ideas and tenderness of feeling. If lovely flowers be seen in a cottage window, rest assured that beneath that roof there exists a gentler and more kindly life than under the next, where not a green leaf is to be seen. Where bees are kept, or pet birds are to be found, there is sure to be seen a glimpse, and a bright one, too, of the tender and more loveable side of our nature.

One, if not the greatest, enemy to cruelty and brutality is *knowledge;* hence let us offer every inducement in our power to its acquirement in connection with the beauties by which we are surrounded.

Though this work is of little or no value to the scientific reader, and is, doubtless, open to a certain amount of adverse criticism, still, taken as a whole, the main proportion of information contained therein is correct; while the various anecdotes and the minute detail of observation are, at the same time, useful and entertaining.

As Translators, we beg to apologise for the unusually voluminous Errata in connection with the early numbers of the work, as well as for the length of time that has elapsed between the issue of the first number and the concluding one.

We cannot close our Preface without gratefully acknowledging the assistance rendered us by our kind friends—Messrs. Sharpe and Dresser; Professor R. O. Cunningham, of Queen's College, Belfast; Dr. Otto Finsch, of Bremen; Mr. John R. Eldridge; and others—in connection with the Translation of this work.

Asking the indulgence of the public for our many shortcomings, we leave Dr. A. E. BREHM's interesting book to work its own way amongst English readers.

And subscribe ourselves, the reader's obedient servants,

WILLIAM JESSE.
H. M. LABOUCHERE.

London; December, 1874.

PREFACE TO THE SECOND EDITION.

I HAVE honestly striven to remedy the defects and correct the errors of this pet child of my pen, without, however, depriving it of the original form to which I moulded it. Every effort of human thought and reflection has its time, and with it a certain justification. Such, indeed, may also be accorded to 'BIRD-LIFE;' not only because it is a favourite of mine, *but because I am indebted to it for the acquisition of many friends.* And if, on the other hand, it has raised the ire of some, do not let the blame be cast upon the Author, but rather on the irritated individuals themselves, who coveted their neighbour's child,—inasmuch as they read a book not intended for their perusal. Those for whom I wrote have understood me; and these lines are written to thank them. I beg their further goodwill by inviting them openly to expose all errors or deficiencies that still remain; for it is only by a true and conscientiously critical examination of the work that I, and possibly further Editions, can profit.

THE AUTHOR.

Berlin; Easter, 1867.

EXTRACT

FROM

PREFACE TO THE FIRST EDITION.

I WISHED to act as an interpreter to those who, from year's end to year's end, are forced to live among the whirl of cities, or, buried in their solitary chambers, remain strangers to our Common Mother—Nature. I would fain beg those whose lives are passed amid woodland hamlets, on the mountain side, in the forest, and by the strand, to take me for their companion in their home-rambles by flood and field, and exchange thoughts with me. I wish to implant in the bosom of those who have not yet awakened to the love of our Common Mother, one grain of that love, and be happy in the thought that that seed may germinate in the heart, flower, and perhaps bear fruit. Lastly, I would offer, metaphorically, the hand of brotherhood to my fellow-thinkers and workers, and all who grasp it shall decide whether I have been a welcome companion or not.

My book shall be entertaining as well as instructive,—one such as is suited to our times. Let the reader look upon it only as a small cabin, or shieling, built in the rough, regardless of style, rule, or plummet,—whose only recommendation is the object for which it is intended. The architect wished this cabin to be as simple, true, and artless, as he could make it, and has built it in the wilderness,—on the slope of a hill among the mountains, sheltered from above by the woods, looking down on verdant scenery below, with a bright peep of the sparkling blue sea between the hills. In the interior hang rough sketches of desert and primæval forest-scenes; pendant, near by, cages with their warbling inmates; the builder's gun, nets, gins, and springes are not wanting;—for the host is an old bird-fancier. On hospitality intent, he opens wide the portal, and invites all to enter, —all, aye! everyone,—grandmasters, masters, pupils of Science;

not excepting those still inexperienced in bird-lore. He pleads, though, first of all, that his cabin shall not be measured by the rule of the learned, or that they should enter expecting to discover anything new: they will perceive at a distance that his house is only constructed with the cast-off stone from the great building, and that there are only few pieces which he has himself collected together. For this very reason, however, he trusts his guests will find themselves at ease; and thus he respectfully opens his door.

Dropping all metaphor, the Author of this book asks the forbearance also of the unlearned, with respect to the design, construction, and carrying out, of the details of the work. He has striven with the utmost honesty of purpose; has taken the results of Science as the groundwork of the whole; and has used these with the utmost conscientiousness: at the same time, he trusts that he has not encroached too much upon the realms of Science. Confined only by time and space,—for where he would have willingly gone into greater detail his knowledge has often been insufficient,—he therefore hopes for kind indulgence at the hands of all his readers.

I have written this book from a genuine love of Nature; and would entreat my friends to remember my oft-expressed feeling against the reckless destruction of birds,—a feeling which, in their behalf, I would fain strengthen in others, by a detailed exposition of the instincts and habits of birds.

Here, then, is my book;—may it win more and more friends for my darling pets!

THE AUTHOR.

INTRODUCTION.

A GLANCE AT THE PAST.

> "Und noch Niemand hat's erkundet,
> Wie die grosse Mutter schafft;
> Unerforschlich ist das Wirken,
> Unergründlich ist die Kraft."
>
> SCHILLER.

UNDERLYING the childlike simplicity of the Mosaic account of the "Creation," there is a dim intimation of what must actually have taken place. "Days" must indeed have passed ere our earth was ready to receive its most beautiful creatures; the "Firmament" must have expanded from the "waters;" Light must have rent the veil of Darkness; there must have been trees and plants;—long before Birds—those light children of the air—took up their abode on our planet. All that is told us is true: what we simply have to do is, to understand that truth, to interpret that story.

Science has, in our time, succeeded in giving us this explanation. The different strata of the earth have become pages of a book, which are read by the learned with intelligent delight. Short, indeed, is the distance which history carries us through the past, in comparison with that guidance we owe to the geologist. We know, with some degree of certainty, at what epoch the different forms of life first saw light on the planet which we inhabit, and thereby can determine the period when Birds, with which we shall be exclusively occupied, first showed themselves on earth.

I deem it not unnecessary, briefly to introduce to the notice of my readers, the result of the researches of our *savants* concerning the origin of terrestrial life. At the outset of creation, when the gases which filled space, gradually condensing, attached themselves to our planet, the elements combined, and the globe, during its first igneous period, changed, there appeared, at a temperature of not less than 60° R., the lowest forms of plants, and together with them probably the lowest animalculæ,—the two so similar in structure and appearance that the most careful observation and the deepest scientific research, which they require even to this day, have not been able definitely to determine their respective lines of demarcation. Convulsions of the upper portion of the earth's crust, conditions of life suddenly ceasing, and the consequent necessarily natural and simultaneous extinction of living creatures, ended this first organic creation: not so the traces; thereby, as it were, confirming from the very outset the everlasting law, that nothing in creation is perishable. Upon this, so to speak, more or less general Death, follows a new Life,—after the first wreck a new creation. Subsequent convulsions, strewing the earth with corpses, leave their mark; but still again a new world arises from the field of Death. After each Death a nobler Life,—for with each resurrection the earth received a more highly developed form, though some of the earlier creations returned, or still survived. The periods between each of these convulsions we call the days of creation,—their length none can determine; neither can any assignable division of time during the earth's creation as yet be allotted with certainty.

Birds had also their periods of death and resurrection. The earth preserves to us their remains in proof thereof. Gigantic Birds lived in hoary antiquity; they have now disappeared, and are forgotten. In the Roc and the Griffon, through dark dreamy myths, the last breath of their existence reaches us like an echo. But these vanishing spectres of the past are reawakened through a poetic medium, and are taken up again in hopeful tones, in the legend of the Phœnix,—that mysterious emblem of the resurrection,—which teaches that everything subject to the power of death must rise again.

If we measure the age of the earth by its strata we find that Birds made their appearance at a very late period; only inferior animals are to be found in the strata next the primary rock. Creatures of a superior organisation would not have been able to exist there, for, at the time of the first plant-world, carbonic acid so pervaded the atmosphere that these creatures, at all events, with the exception of the aquatic species, would have been poisoned by it; they could only appear after the atmosphere had been purified by plants absorbing the carbon and giving off oxygen. At the earliest assignable period of creation the vegetable kingdom showed the greatest uniformity, while, on the contrary, the animal world showed some variety.

In the grauwacke we already find flower-like, radiate, soft-bodied, and crab-like creatures, and, rarely, fish, which, as aquatic animals, may possibly have been the first representatives of the vertebrates. In the coal measures the above classes subdivide themselves into genera and species. The first terrestrial vertebrate animal, a lizard, is found in the Zechstein, or magnesian limestone, group of Permian (Upper Palæozoic age). From this new forms are continually appearing, until we find on the Upper Jura the bone remains of birds and mammals; even the feathers and eggs of these early forms of birds have come down to us. The Cannstadt calcareous-tufa has stored up for us the most exquisitely preserved eggs and feathers of primæval birds. In the Island of Madagascar giant specimens of petrified eggs have been dug up, belonging to birds of which we can scarcely form any idea.

Although we have now, in a certain degree, determined the period at which birds first existed, we have, notwithstanding all our experience, not obtained any satisfactory explanation of the words:—"Let there be...... and it was so." Creation, as much as Life itself, yet remains a mystery. Still it need not appear to us more wonderful than the origin of an animal existing at this moment, of whose development we have evidence before our eyes at the present day. We may well call the one "natural," and the other "wonderful,"—"*For all the workings of Nature are wonderful, and all her wonders natural.*" Many have essayed to explain this text. Some argue the origin of birds to have arisen from primæval eggs, inasmuch as they would fain interpret the secrets of the past by what is obvious in the present. They have comprehended the wonder not one whit better than those who would see a full-fledged and perfect bird arise from the early slime, like the Grecian Aphrodite from the foam! The first of these would do away with the perfect plant, and confine themselves simply to the germ, as though it were less wonderful than the tree which springs from it!

We must, however, quietly admit that this war of words leads to the brink of a gulf which we are at present utterly unable to span.

Chemistry and Physiology, with ceaseless energy, try hard to bridge over this gulf; but, as yet, they have been unable to find foundation or foothold for a single pillar of their structure. Analysis makes giant strides: slower, with anxious delays, retracing its steps, and, again pushing forwards, follows the science of the doctrine of life. The first understands well how to analyse and separate the elements from their various combinations, but fails to discover the magic spell which should compel the scattered atoms to reunite in a life-awakening bond: it vanquishes the bond itself, but is defeated by each of its component parts; and natural philosophy, though called to their assistance, can afford no help. This great triple alliance proves and watches each expression and working of life; and, though hoarding its hard-won treasures, yet cannot purchase the explanation. Life is being: the "How?" will ever remain inexplicable.

We can safely state, then, that we still remain ignorant of the causes of the creation. Nevertheless, it is certainly not useless to learn the scheme which speculative human intellect has built up, in order to explain, if not that creative energy, at least, the course of the creation. A few words from our gifted Reichenbach would not be amiss here:—"A cursory glance at the development of organisms, in our time, will probably convince us that in the early stages of creation she had her fixed laws, which, through the course of ages, have ever been practised, and which she has founded on none other than an appropriate basis; and that before the appearance of plants and animals she certainly first created their germs; so, too, before the appearance of birds she first made their eggs.

"Just as Oology is the mother of Ornithology, so must we also remember that in the generative principle, which guides all true contemplation of Nature, the lower ever precedes the higher; and thus we are far from wishing to assume the probability of such prototypes as the Eagles, Parrots, and Peacocks, being the precursors in bird creation, but are much more inclined to hold the opinion that the first weak essays of bird nature were half bird, half fish-like forms, similar to the Penguin, subsequent to the former creation of fish and amphibious animals. Inasmuch as in all classes and orders the imperfect takes precedence in an all-wise economy, pioneering the road for the perfect, so it might happen that these Penguins occupied at this period slightly elevated coasts: and thus, when in these days we find remains of bones only in the most recent strata of guano, it might have been that at that time the decomposition of the remains, through the corrosive nature of the excreta, is the reason why fossil bird-bones are so rarely discovered.

"These primitive Penguins were followed, then, in the further course of the fletz period, by gigantic swamp birds, which have written with their feet, on the geological records of Nature, indelible evidences of their existence; while their bones, together with those of their earlier predecessors, have disappeared. The indelible foot-marks found on the primary strata of the Trias group remind us of mighty Jabirus and gregarious Storks.

"The more extensive development of vegetation rendered the existence of tree-birds a possibility, and a primæval type of Woodpecker, Thrush, Crow, and Fish Hawk were created, so as, in a certain degree, to produce a primitive legitimate balance amongst the worms, insects, and fish. When, during the tertiary period, vegetation continued to expand, and, reaching a higher state of organization, divided itself into endless types,—Waterhens, Rails, Partridges, Wood Grouse, as well as a mighty family of Ostriches, appeared on the most recent raft-like floating masses of the earth's crust, and completed the forms of the primitive progenitors of the bird-world; on the other hand, in contradistinction to the Penguins, these later forms, losing their powers of flight, were annihilated by the Deluge.

"We have now, however, seen these primitive types of birds develope themselves in a manner that may be compared to the different progressive ages of an individual: for the Penguin, by reason of its fin-shaped rudimentary wings, remained in the grade of the imperfectly-fledged nest-bird, so to speak; the Herons and Storks, moulting almost the whole year round, resembled the fledgling; while the Woodpecker, Thrush, Crow, and Fish Hawk, acquired maturity;—thus predicting a perfecting of the powers of flight, amongst birds frequenting trees and the regions of the air. At last we approach the diluvial epoch: we find aquatic birds represented by Waterhens, Rails, and gallinaceous birds, confined in their means of locomotion to the earth's surface; also immense running birds, like the Ostriches;—all seem to lose the gift of flight; thus, as it were, becoming aged, turning into the 'lean and slippered pantaloon,' so to speak, of the bird-world,—a poor reflection, in fact, of the power of the bird in mid-air, such as is possessed by the Eagle; thus, appearing to us as a passing link in the direction of the mammals, especially when their anatomy is taken into consideration.

"If we look back upon these primitive forms created at the commencement, probably only in isolated species, we have the option of electing whether we choose to accept Kaup's theory, 'that they arose partly through a transmutation from the Amphibia, and then developed themselves into higher forms, or that, which seems to us more probable, each originally sprang from the individual generation of primæval eggs, and that the later and nearer-related intermediate forms resulted possibly from the union of certain primæval pairs, while other individuals continued the type; so probably, in accordance with all experiences of Geognosy, the multiplication of forms only took place by slow degrees, and that thousands on thousands of years elapsed before creation reached the sub-species which now crowd our books.'"

It now remains to be asked whether the creative power still continues to work in our time, or has ceased to do so? Every year species of animals new to us are discovered by naturalists, and are classed, without further ceremony, as belonging to the same date with those already known; the same would be assumed, even, were a totally unknown bird suddenly discovered in a country supposed to be thoroughly explored. We are utterly unable to say anything certain on this question. The disciples of the old school argue that the creation of animals ceased after man was created, and they would rather contend that the intermediary forms are the result of the blending of others, although this theory is, and I believe rightly, denied by many. So many questions arise, in these sort of discussions, that it will be well for us wholly to disregard them.

We, on the other hand, should do better by saying a word or two about those birds which are gradually becoming extinct in our own time. Among this class of birds many have disappeared within the records of history, not leaving even a trace behind. We have the concurring evidence of more than one reliable author that so late as the last century several extraordinary birds, which then existed in the islands of Bourbon, Mauritius, and Rodriguez, have now disappeared. The best known among these is the celebrated Dodo, of which Captain Castleton (1613) gives the following account:—"There are a great many birds to be found there, both great and small: swarms of Doves and Pigeons, great Parrots, &c.; lastly, a big bird, very fat, and such a bad flyer as to be unable to rise from the ground. It is white, and exceedingly tame,—though, for the matter of that, all the other birds are so, because they are not disturbed or frightened by being shot at. Ten men can catch as many birds in one hour as would suffice to feed forty for a whole day." Five years later the celebrated Dutch navigator, Bontekoe, visited these islands, and also saw a few Dodos:—"They had no wings, and yet could scarcely walk, as they were so fat that their bellies touched the ground."

We have continued information about this bird up to 1730, "the same time in which the talented Bernardin de St. Pierre laid the scene of his beautiful Idyll, 'Paul and Virginia,' in our island." Even in 1763 a British seaman spoke in such a manner about the island of Bourbon that one might be led to believe that this species was then still in existence. At length, forty years later, a naturalist visited the island, but did not find a single living specimen of this remarkable bird surviving; the very name, even, had long since passed away from the memory of the inhabitants. The Dodo had ceased to exist.

These islands have, of late years, become the theatre of a great amount of investigation after these extinct birds. The result leads to the conviction that these do not belong in any degree whatever solely to the one family of which the Dodo was the representative, but that, on the contrary, there are species to be found among them which it is impossible to class with the Dodo. Thus we have arrived at the certain knowledge that a bird of gigantic stature (quite as large as the African Ostrich) at one time existed there; as did also another species, often spoken of as the "Oiseau bleu," which was a gigantic Gallinule, in no way allied to the Dodo. We have received sufficiently detailed descriptions of both these species from eye-witnesses, so that we have no need to doubt that they once existed.

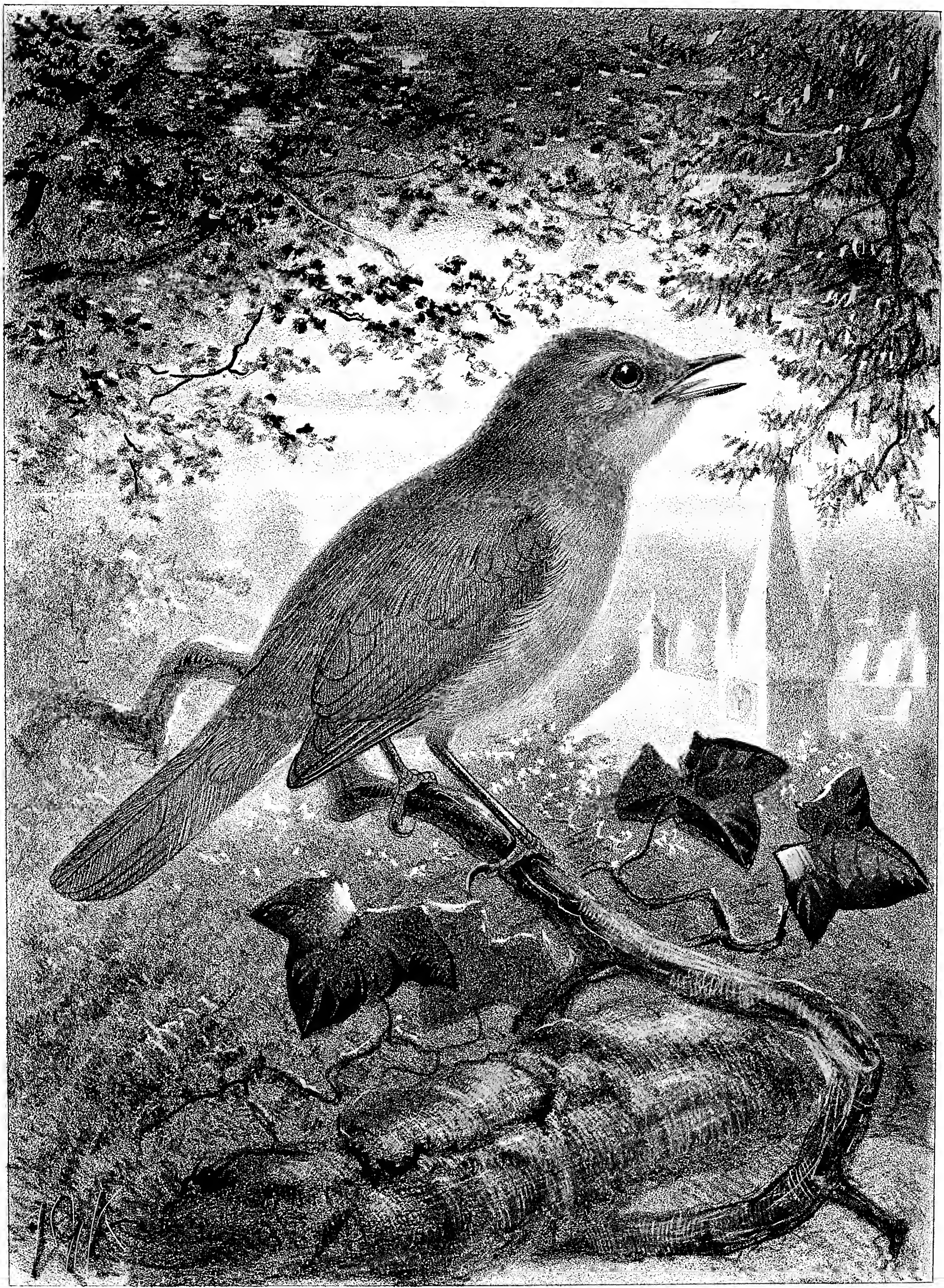
The gradual disappearance of some birds is even now taking place before our very eyes: the Manu-mea (*Didunculus strigirostris*)—a native of the Samoan Island, of Upola, and nearly allied to the Pigeons—is fast disappearing; the harmless Pigeon of Tahiti (*Phlegoenas erythroptera*) will, before long, cease to exist; a large night Parrot (*Strigops habroptilus*)—belonging to Stewart's Island, near New Zealand—is so persecuted by collectors, and hunted by native dogs, that it will soon be numbered amongst the animals that have passed away; the "hoary and unwieldy Nestors (*Nestor hypopolius* and *productus*) among the Parrots, also mourn, in New Zealand and Phillip's Island, the decadence of their expiring race." The Apteryx, or Kiwi-kiwi, will also soon share the same fate as the Dodo. It is now a matter of doubt whether the "wingless" Auk (*Alca impennis*)—of which I will speak again later—still lives among the storm-beaten islands and headlands of the Arctic Ocean; for since the last bloody onslaught of a ship's company thirty years ago against these poor birds, so helpless ashore, we have not been able to obtain the slightest evidence as to whether any are still in existence or not. The most magnificent of all European birds of prey, the Lämmergeier (*Gypaëtos barbatus*), of the Swiss Alps, becomes rarer and rarer every day; and, owing to the unceasing persecution of relentless man, there remains but little prospect of its existence extending over many years. The same may be said of many birds that still continue to adorn our woods, meadows, and waters. The oft-heard plaint that many birds are disappearing is no mere empty phrase:—"It is man that strives most ruthlessly to break the links of life, and who seeks to disturb the balance which Nature, pure from the first, so beautifully adjusted." The poet's words are indeed full of truth:—

"Die Welt ist vollkommen überall,
Wo der Mensch nicht hinkommt mit seiner Qual."

"The world is perfect everywhere,
When still unblemished by man's ruthless hand."

PART I.

PHYSICAL LIFE.



J. G. Keulemans lith. M & N Hanhart imp.

NOCTURNAL SONG

BIRD-LIFE.

PART I.—PHYSICAL LIFE.

CHAPTER I.

THE BODY.

> "Birds, the free tenants of land, air and ocean,
> Their forms all symmetry, their motions grace;
> In plumage delicate and beautiful,
> Thick without burden, close as fishes' scales,
> Or loose as full-blown poppies to the breeze."
>
> MONTGOMERY.

A MERE external survey of the bird at once determines its rank as a being of a high class. That it holds only the second place amongst living creatures is true. Nor is this too much to say when one considers that man alone, with the exception of some few other mammals, surpasses it in powers of intelligence; while its bodily structure forms a most harmonious whole. At the same time, it is scarcely right to speak of the bird as more highly gifted and better equipped than most mammals; for, taken strictly, each animal is in keeping with the interior economy and external circumstances which make it what it is. With this object, too, every being is always adapted in the most efficient manner to serve the purposes of its existence, and each and all fulfil the ends demanded by their lives. We can only look upon the origin of an animal as the product of a certain combination of active powers not yet discovered, but to be sought for in the external conditions of life. We will not, then, regard any one part of creation as more wonderful than another, but always remember that the endless diversity in the conditions of life has necessarily produced a corresponding variety in the vast number of animal forms. It is with this limitation of meaning that the expression, "the bird is a masterpiece, a marvel of creation," is to be understood.

Birds have much in common with mammals; and it is certain that some striking resemblances between individuals of both classes cannot be denied. Every impartial observer must recognise in the Eagle the image of the lion, or rather its true representative in the bird-world; in the Owl we see the cat; the Raven resembles the dog; the Vulture, the hyæna; the Hawk, the fox; the Parrot, the monkey; the Crossbill, the squirrel; the Wren, the mouse; the Butcher-bird, the weasel; the Bustard, the stag or antelope; the Ostrich, the camel; the Cassowary, the llama; the Dipper, the water-rat; the Duck, the duck-billed platypus; the Diver, the otter; the Auk, the seal; and so on. In spite of all these resemblances, which, after all, only apply to the external aspect,* the bird is always and essentially distinct from mammals.

I do not intend to enter upon a minute description of the bird's body, though I cannot leave this subject without some exposition, if I would make myself clearly understood by those of my readers who have never had an opportunity of studying it with the scalpel and magnifying glass in their hand. Whoever would become familiar with the life of any animal must study the animal itself. Thus it is that we seek to make ourselves acquainted with the creature of which we are now treating, and to describe the gifts and properties with which nature has endowed it, so as to enable it to provide for its existence.

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* It would appear to us that the author, in using the words "external aspect," has not given the true explanation of the resemblance existing between the above-mentioned birds and mammals, as in some cases the "external aspect" is widely different, while the *real* resemblance lies in similarity of habits and character.—*W. J.*

The bird is essentially a creature of the air, in the full meaning of the word: the wide expanse of æther is its home; in this it lives, makes it a servant, and yet, on the other hand, is governed by it. The respiration of an animal, as is well known, serves principally to maintain the temperature of the body. In the bird it has an accessory use: it enables it to fly and helps to support it. The air inhaled, in its passage through the lungs not only enters into chemical combination with the blood, but also distributes itself between and among the bowels through a number of sacs and cells almost all over the body. Most of the marrowless and the more cellular bones* also contain air. The lungs do not, as in mammals, hang free in a closed cavity of the chest, but lie flat, adhering in spongy masses to the inner surface of the back; with these the above-mentioned sacs and cells stand in either direct or indirect communication, as do also the empty spaces in the bones and the cellular tissue. The Pelican is furnished with a regular air-sac or pillow under the breast, and almost every bone in the body is filled with air; while in other birds there are only one or two bones thus hollow. This faculty of distributing the air inhaled throughout the body has been called in German "Pneumaticität" (that is to say, the power of inflating with air); it is peculiar to this class of birds. Its use is easily discernible; the air thus dispersed through its frame is warmed by the body and expands, so as to make it more buoyant, and, at the same time, facilitate respiration under the most varied pressures of atmosphere: thus it assists flight.

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* The African Hornbills (*Bucerotidæ*) afford some of the most curious examples of the distribution of air in and about the bodies of birds. Among these we find the skin almost totally detached from the flesh, being only connected with it by a number of fine filaments, especially along the sides under the wings. So light do these birds appear on the wing that they seem at times scarcely able thoroughly to control their movements; and their appearance, when perched on the top of a tree, suggests the idea of a child's balloon attached to a stick.—*W. J.*

A second absolutely indispensable appendage of the bird is its feathers: these (as the proverb has long told us) make the bird what it is;—a bird. The feather combines in itself all the following necessary qualities:—lightness, compactness, with slight heat-conducting power, durability, elasticity and beauty. It is one of the marvels of creation,—like the eye; either of which only yields its secrets to the closest scrutiny. He who examines a feather under the microscope sees before him a masterpiece of mechanism. The feather is a product of the outer skin or epidermis, quite as much as the hair of a mammal or the scales of a lizard; but it differs vastly from both. It consists, as all know, of the quill, the shaft, and two webs or fringes: these webs are precisely the portions which demand the most careful observation, inasmuch as but few persons are aware of their component parts.

Each web, even of the smallest feather, shows a twofold repetition of the original form of the feather in its innumerable separate parts. It consists of other webs: these are attached to shafts, and bear a second row of webs, or rather filaments; and, lastly, these are bordered with cilia.

The web is closely attached to the upper edge of the horny convex surface of the flexible shaft, and occupies from a fourth to a fifth part of its side. Their filaments are threadlike in form and almost cylindrical; in the quill-feathers, however, the laminæ are trapezoidal in transverse section, more deep than broad, and wider at the top than below. These are placed at an angle of about forty degrees to the shaft, inclining lengthways towards its extremity, with their flat sides next each other. The webs of the latter are in turn composed of two fringes of filaments, and are attached to their shafts in the same way as the former to the principal shaft; still each of those laminæ, turning towards the body of the bird, is invariably covered by the outer web of the next ray.

By means of the hair-like processes, which are attached to the above filaments, being hooked and cohering together, the most intimate union of each part of the filament is effected; so skilfully are they contrived and so closely do they cohere together as to be impermeable to wet and impenetrable by the air. It requires, indeed, some degree of force to break up the uniformly compact arrangement of their component parts. The laminæ or filaments of the other feathers, as well as all down, hang more loosely, and are placed further apart; thus they are lighter and more elastic. In this case the cilia do not cohere; their function being simply to sustain the warmth generated in the body, such cohesion is not needed.

Individual feathers exhibit great differences in form, though always in harmony with their colouring. A green feather is differently constructed from a red one, and the formation of a red feather differs from that of a black or grey. Under the microscope we can detect, even in one and the same feather, several distinct modes of construction, each agreeing with a certain shade of colour. From this it follows that the beauty of a feather depends less upon colouring matter than upon the disposition of the rays of light in reference to the construction of the feather itself.

No matter how singular the structure of a feather may be, it is always absolutely necessary to the existence of the bird. It gives flight, maintains the proper temperature of the blood, lends softness to the form and beauty to the colouring. The feather makes the bird a bird, as much as the hand makes a man a man. The possession of feathers and the power of inflation are the two most essential endowments of the bird's body, and they belong to it alone.

But there are still other characteristics distinguishing the body of a bird from those of other animals, which we have now to consider. The framework of the thorax is remarkable for extreme firmness and immobility. These properties are both due to a remarkable elongation of the sternum or breast-bone, and the close connection of the dorsal vertebræ with the sternum as well as with one another. This bone shields the whole chest, like a breastplate, and covers a part of the abdomen as well. It is attached without any cartilage to the sternal ribs. Along the centre of the thorax runs a strong keel, absent in the *Struthionidæ*, to which are attached the pectoral muscles. The ribs are provided with peculiar processes, which link them together. The vertebral column is as flexible at its extremities as it is rigid in the centre; the vertebræ themselves vary considerably in number. In mammals, generally speaking, the length of the neck is determined by the length of its vertebræ, which are apportioned by a certain fixed number; but with birds the number of vertebræ increases in proportion to the length of the neck. Hence they may vary in number from nine up to as many as twenty-four. The number of the remaining vertebræ is very uncertain. The dorsal vertebræ number from six to ten, seldom more than a quarter of the whole. The sacral vertebræ (in many cases almost completely united) are always more in number, reaching from twelve to twenty. The caudal vertebræ are exceedingly supple, and number from five to nine. Of these the last or hindmost is more or less perfectly developed in proportion to the resistance which the tail has to overcome, or to the development of the feathers in the same. In the framework of the shoulder the merrythought, or furculum, is noteworthy. It is firmly connected with the humerus and caracoid, and is composed of the two clavicles blended into a single bone, but is not always affixed to the sternum. The wing consists of an upper arm-bone, which is very strong and hollow, and two lower arm-bones of nearly equal length; the wrist, or carpus, is composed of one or two bones, and the palm, or metacarpus, of two or three. Attached to these are one, two or three fingers, which are, however, enclosed together under one common skin.

The pelvis (except in the Ostrich) is open beneath. The leg is composed of the femur, tibia, and fibula, the knee-pan, or patella, the tarso, metatarsus, and the phalanges, or bones of the toes; the latter number from two to four, of which two invariably, and in most cases three, though very rarely all four, are turned to the front. Sometimes one toe is so jointed that it can turn either backwards or forwards. The bones of the skull unite together early, and rapidly become hollow, ready for the reception of air. The jaws or mandibles are both more or less moveable. They are without teeth, covered by a horny sheath, and are composed of a number of separate bones.

The principal muscles are those which move the wing. In birds of prey the great pectoral muscles are very strong and massive. In the case of birds which do not fly, such as the Ostrich, these muscles, as well as the sternum, are very imperfectly developed, while those of the thighs, usually slight in most birds, are extremely powerful. Besides these, the muscles of the lower limbs merit notice on account of their gradual transmutation into the tendons which serve to move the feet and toes. It is also worthy of remark that certain of the tendons passing direct from the muscles of the thigh serve to bend both the knee and the toes, by which means the bird is able to sleep with bended knees, and thus, without conscious effort, firmly grasp a branch. The muscles of the tail are also very powerful, being used to elevate, depress, twist and turn that appendage. The muscles of mastication are more firmly constructed, the cutaneous muscles more effective than those of mammals. Very remarkable are the muscles which act on the skin of the wing, one of which extends between the body and the upper arm, and the other between the upper arm and the fore arm. The muscles of the abdomen are very insignificant, owing to the great extension of the sternum, while the diaphragm merits scarcely the name of a partition between the cavities of the breast and belly. All the muscles are capable of immense exertion.

The digestive organs are very heterogeneous, varying much with the food of the different species. The mouth or beak is unprovided with teeth, but the mandibles are, as we have before observed, covered with a horny sheath, the edges of which are sometimes sharp, sometimes blunt, and in some cases notched or serrated, in others smooth, and are either hard or soft according to the species.

In flesh-, fish- and grain-eating birds this sheath is excessively hard, while among the insectivorous it is soft, and is especially so with those which extract insects from mud; in the latter case the bill often acts as a feeler. The tongue varies as much in its formation as the beak. In those birds which swallow large quantities of food at a time, like the Pelican and Stork, it is small and cartilaginous; with those feeding on fruit it serves as a taster, being large and fleshy, as in the Parrots; in the Sun- and Humming-birds it is provided with brush-like extremity, and can be projected like that of the Woodpecker. The gape is often surrounded with papillæ and spines, and is sometimes of a large size; certain glands secrete the saliva. The gullet in some birds is of a uniform width throughout, and but slightly elastic; in others just the reverse. In the Lämmergeir it is furnished with folds inside, so as to facilitate its extension. In others, again, namely, diurnal Raptores and granivorous birds, it is distinguished by a single or double pouch or bag of a round form, which we call "crop:" in this pouch all food is, in a certain degree, prepared for digestion by maceration and decomposition. During the breeding season the internal lining of the crop of some birds secretes a certain milky or cheese-like substance, which serves as the first nutriment of their young, as among Pigeons. When there exists a true crop the lower portion of the gullet is generally somewhat contracted, and then widens again gradually till it reaches the fore stomach (*pro ventriculus*), which with birds that have no crop is scarcely enlarged at all. This is sometimes called the glandular stomach, on account of its being abundantly supplied with juices secreted from the glands imbedded in its walls; following this, lower down it reaches the second stomach or gizzard, where it abruptly terminates. These various modifications occur according to the nature of the food. In the carnivorous birds the gullet is large and of a fine texture; among granivorous birds it is, on the contrary, small, and is surrounded by two strong muscles and sinews, which allow the distended coatings of the stomach to rub against one another like mill-stones. The intestinal canal is divided into the small and great intestines, and is comparatively short. Liver, gall-bladder, spleen, pancreas and kidneys are to be found in almost all birds; the secretions from the latter discharge themselves into the rectum, where the urine mingles with the excrement, which is then evacuated. Among the secreting organs there still remains a gland worthy of notice, which secretes an oleaginous fluid, used for the purpose of greasing the feathers. This gland is situated above the caudal vertebræ, and has several canals, through which the fluid is passed by repeated pressure from the beak.

According to the different construction of the digestive organs we are enabled at once to determine the class of food, and, indirectly, the ways and means of digestion, as well as the time required for its completion. It may generally be asserted with truth, that a bird can digest quicker and more easily than any other animal,* and that for this reason, also, they can eat more than other creatures. This harmonises with the active circulation of the blood, and their extreme liveliness of movement. Many birds feed the live-long day, as song-birds, whose daily amount of food exceeds twice or three times the weight of their own bodies. It is a fortunate thing for us that we are not blessed with such appetites, else we should require from two to four hundredweight of food per diem! On the other hand, however, it is fortunate that our little fruit-, flower- and plant-protectors should be so voracious. Carnivorous birds do not feed in the same proportion; luckily for creation their daily ration barely exceeds one-sixth of their own weight. Some, like the Vultures, devour, it is true, an enormous quantity at a time; but they can also fast for days after.

According to its nature the food descends at once, either direct into the stomach or, first, into the crop, there to macerate and otherwise undergo preparation. The crop is, if possible, always full, and standing out prominently from among the feathers of the neck; this swollen sack presents no very elegant appearance. Other birds, for example, the Cranes and the green Woodpecker are, during the breeding season, obliged to use the œsophagus itself as a crop, inasmuch as they fill the same to the top with food. Carnivorous birds, which kill and devour living animals, drink but little or nothing after the meal; all carrion-feeders, however, and many reptile-eating birds, on the contrary, drink a considerable quantity of water. Granivorous birds do the same, so as to macerate the food in their crops. The digestion of birds of prey is so powerful that they can even rapidly digest old bones, as do the Vultures. Birds feeding on seeds require other means of digestion beyond those afforded by the chemical working of the crop and the juices of the stomach; these are supplied by purely mechanical means, which bruise the grain by the help of sand and small stones which they swallow; all such birds whose food contains in itself the means of grinding, do not do so; as, for example, those feeding on shell-fish or snails. Indigestible materials, such as hair, feathers, scales, &c., are thrown up by flesh- and insect-eating birds (Owls, Goatsuckers, &c.) in dry round or oblong pellets, called "castings." Immediately the crop is empty the bird begins to feed again, and, indeed, sometimes, though it is quite full at the time, the creature will still continue to feed, should it come across something more to its taste than what it has already enjoyed. After a long fast it is astonishing the amount that a bird will devour; though it is not a question of a surfeit, still, after an unusual feast, its precautions for personal safety are sometimes forgotten during the after-dinner sleep: birds of prey have been caught napping, more than once, with the hand, while enjoying their "forty winks." Many flesh-feeders, like the Marabou Stork (*Leptoptilus*), are so greedy as to, though mortally wounded, hastily devour anything thrown to them. Others, again, will starve rather than touch even their natural food when offered them in captivity or under adverse circumstances.

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* With fish digestion is quite as rapid; if not more so. I have often caught jack and perch with small fish sticking in the gullet, the upper portion being fresh, and the lower in process of digestion.—*W. J.*

Birds, as well as all other animals, become fat or lean, according to the quantity and quality of the food they obtain: emaciation, however, does not take place so rapidly as one would imagine, for many birds are able to do without food for days, and even weeks, together. The anatomist, Nitzsch, tried the cruel experiment of starving a Swift to death: the poor creature did not die until six weeks had expired.*

The arterial and veinous systems in birds are not materially different from those of the Mammalia; the heart in the former is composed of two ventricles and two auricles, as with the latter; the arteries and veins themselves are also similar to those of the Mammalia, the pulsations of the heart, however, are more rapid than in mammals of similar size: this is owing to birds being exposed to more rapid changes of atmospheric pressure.

Most singular are the respiratory organs, to whose wonderful distribution I have before alluded. It now remains to us to examine more closely the construction of the windpipe. This is not remarkable alone for its length; but, in birds gifted with voice, for the possession of a second larynx. First, low down in the chest we come to the division of the bronchia (this, in the case of the Humming-birds alone, takes place in the centre of the throat); in addition there exists in some birds, usually Gallinaceæ, marsh- and water-birds, and especially among the males, a most curious detail: the trachea makes a variety of bends and twists, both inside and outside the cavity of the chest, even in the sternum itself. In the Crane, for example, it passes down into the cellular keel of the breast-bone, runs along its entire length, returns again to the place where it first entered, and mounting upwards then first passes over to the lungs. In the wild Swan (*C. musicus*) it takes only one turn through the sternum; while in the mute Swan (*C. olor*) nothing of the sort occurs. In the Guineafowl it passes into a bony enlargement at the junction of the clavicles. In the Capercaillie, several Pheasants and a Duck it takes a turn under the outer skin. These modifications agree, all, more or less, with the trumpet-like voices of these birds.

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* This anecdote is scarcely credible, when we reflect on the insectivorous nature of the nutriment of this bird: to strengthen this observation I may mention that Dr. Otto Finsch, of Bremen, told me that he remembered seeing Swifts affected in a very different manner by the want of their natural food; he stated that on one occasion, in Silesia, some days after the arrival of these birds, an unusually heavy fall of snow so thoroughly cleared off all the insects that in three or four days Swifts were to be found dead on the ground through starvation, though, in this case, it must be confessed the unusual change of temperature may have accelerated death. —*W. J.*

The two larynges are not less worthy of notice. The upper one of these two, which is moved by three muscles, is a simple expansion of the windpipe, with a lateral fissure of the glottis; the lower, or second, is quite differently formed; it is, without doubt, the true organ of the voice, and is generally situate directly above the point where the two bronchiæ divide; in some few cases, however, derived from the bronchiæ themselves. According to the nature and method of the attachments of its membranes to the peculiarly modified firmer portions of the windpipe, they are fitted to become thrown into undulation, so as to move the column of air in contact with the larnyx in a vibrating manner. Frequently the windpipe is peculiarly developed in the neighbourhood of the lower larnyx; its rings lie in closer apposition, and become expanded to form the so-called "drum," an ossified, irregular, bladder-shaped enlargement of the tube. In the "drum" we distinguish various bands, folds of membrane, and cartilaginous rings, all serving to the perfecting of the beautiful organs of sound. This has not inaptly been compared to a wind-instrument, wherein the lower larynx represents the mouthpiece, and the upper one the lower end of the instrument. The strength and flexibility of the tones depend entirely on the fulness of development of the organs of the voice.

The organs of reproduction lie hidden in the interior of the body. The ovaries are originally produced in pairs; but the one on the right side soon wastes away, and that on the left only becomes fully developed: it lies close to the left kidney, and is composed of two membranous plates, in whose folds numerous eggs will be found developed in the form of small bladders. From the ovary a duct passes to the rectum. The genital organs of the male are similarly situated.

The organs of the senses, to which we finally turn our attention, much as they, in general, resemble those of the mammalia, are subject to many partial and very considerable differences. The most important are those which relate to touch or feeling. It is only among a very few families of birds that the beak ever serves as an organ of touch; with others the tongue, and possibly the feet also serve the same purpose: these, however, are the only members of a bird's body which can communicate such outward sensations to its understanding Against this assertion we may notice that all birds appear to possess a very delicate perception of exterior action. Every bird feels the abstraction of the smallest feather, the slightest touch even; and it is highly probable that its prescience of changes in the weather is attributable to its extremely delicate susceptibility to atmospheric influences, as it feels heat and cold most easily, although able to bear both extremely well.

The sense of taste seems to be developed in only few families. By far the greatest number of birds possess a tongue very much stunted in its development, which is really not used for taste at all; the palate also is hard, and apparently devoid of sensation, yet, in spite of this it cannot be denied that all birds are, in some degree, possessed of the sense of taste.

The sense of smell, however, stands incomparably higher than those of feeling and taste; in no way, however, so much so as has been imagined. No one bird is capable of detecting an odour at so great a distance as a scenting mammal can. It has been thought that Vultures could discover a carcase many miles off by their powers of smell. I have, however, after long and careful observation convinced myself of the fallacy of the idea. The outer nostrils consist of simple holes placed on either side of the top ridge of the upper mandible, and are devoid of all muscular action. They are of different forms. With the Corvidæ they are covered and protected by a ring of stiff bristles or hairs; while in the Petrel they are of a lengthened tubular construction. In some birds they are oval, in others they take the form of a cleft or slit; some are covered with a lid, others are perfectly open; most are separated by a partition from one another; others, the reverse. A single instance is to be found where they are situate quite at the end of the bill; and this is the Kiwi (*Apteryx*) of Australia, a nocturnal feeding-bird. They are connected by a common duct with the internal nostril, where lie the organs of scent: three thin, bony, or cartilaginous laminæ, often wound round one another; these are covered with a thin shining membrane, and afford room for the expansion of the extremity of the olfactory nerve.

The sense of hearing is excellent, though the external ear is wanting. The mechanism of this apparatus resembles that of the crocodile. It is only among very few, as, for instance, the owls, that the external ear is in some way replaced by large folds of skin, which are surrounded by curious stiff feathers. In other birds the orifice of the ear is covered by feathers of a very loose texture, which do not deaden the sound. The drum of the ear lies flat, and is only connected with the small column by the otia or ear-bones. These correspond to the stapes in the Mammalia, and possess a longer stalk or shank, which closes the little opening leading to the vestibule of the labyrinth. The cochlea of the ear is similar to that of mammals. When one takes into consideration the extraordinary development of the bird's voice, it is not astonishing to find the sense of hearing in such perfection. All night-birds of prey take notice of the slightest sound.

The eye, however, will always remain the most perfect of all the organs of the senses: from the beauty of the colouring, its brilliancy, its size in comparison with the skull and brain, and its third eyelid or nictitating membrane; as well as from *the faculty of an inward spontaneous movement, whereby the bird can become long- or short-sighted at pleasure.* The eyes are usually placed very much on the sides of the head. Some naturalists have thought necessary to gainsay the bird's capability of commanding a larger field of sight than that immediately in front of the eye: anyone, however, who has observed, knows that a bird can see as well in front as at the side. The nictitating membrane is an almost transparent and highly elastic connecting skin, which can be drawn over the globe of the eye, and serves to mitigate the glare of the sun's rays,* is almost continually in motion. For the modification of the focus they possess an apparatus consisting of moveable bony plates formed into a ring, which can be compressed together; this again presses forcibly on the globe of the eye. By means of this arrangement the latter can be rendered more or less convex; convexity giving long-sightedness, while flatness produces a sharp short-sight. From behind, the so-called "pecten" works with the same object, inasmuch as when injected with blood it swells, thus pressing the glass-like ball together, while, when it empties itself, the ball expands again, by which means the crystal lens moves backwards and forwards. Probably the various colouring of the iris, passing from silver-white on through yellow, grey, light blue and various shades of the darker colours, has little to do with the greater or less sharp-sightedness of birds, in most of which this gift is extremely powerful. A bird of prey can see a small object of the same colour as the ground on which it lies at a distance of a thousand feet: a Vulture will detect and distinguish a carcase from a height that is quite beyond our powers of sight, though the human eye is so large in comparison. Sight is the most valuable gift of the bird: it can exist without the remaining senses; but without sight it must perish.

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* Possibly, also, for the removal of dust on the face of the lens.—*W. J.*

CHAPTER II.

THE MOVEMENTS.

> "Einige klimmen
> Ueber die Höhen,
> Andere schwimmen
> Ueber die Seen,
> Andere schweben,
> Alle zum Leben!"
>
> *Faust.*

THE main foundation of all existence and being is movement: this is, in general, the evidence of life. Worlds roll on through boundless space—and live; the original substances of all things circulate one among the other, when about to attain the visible and tangible; the germinating seed expands and moves itself, as it changes into the plant; as long as life continues, the sap ceaselessly rises and falls. Movement is life, and life is the power of self-motion.

In space everything moves under a law of necessity, and the living creature, alone, does so of its own free will,—truly a God-like gift. This power of volition exalts it above other creatures, just as man—in virtue of his intellectual motion, which has reached the highest step—rises far above the brute. The idea that an animal is perfect in proportion to the freedom and completeness of its movements naturally presents itself, and, indeed, appears, within certain limits, well founded.

To include man in the list of animals which we would select for comparison, is not our intention, although we might readily do so; for, by the power of his genius, he creates for himself the wings that he lacks, and through his intelligence spans the mighty ocean. We may, most assuredly, assert of animals, that the existence of each one is more perfect, active and life-like, in proportion to the ratio in which its movements partake, in a more or less degree, of the attributes above-mentioned.

In this respect bounteous Nature appears to have emptied her cornucopia among the birds as a class. The Bird is, of all creatures, the most versatile in its movements; it runs, climbs, swims, dives and flies. Here we find combined in one creature almost every possible variety of motion; and, though all these various kinds are not to be found in a single species, still they belong to birds as a class, and the individual even is generally possessed of several, or, at all events, one of these in the highest perfection. Coupled with external motion a still higher organisation of movement is to be found in the interior of the body. In no other class of animals do we find so active a change of matter, or blood so warm, as among birds. The one is a necessary consequence of the other; it is the greater power of respiration which gives the bird all its vigour and liveliness.

All birds are not endowed with the same perfection of motion, but exhibit many gradations of power in this respect. What a difference there is between the rapid stride of the Ostrich, and the all-but totally helpless movement of the Swift, on land! There are quick runners, as the Bustard and the Plover; nimble ones, as the Sandpiper and the Lark; slashing trotters, like the Cassowary and the Emu; quick jumpers, as the Magpie and Thrush; light-hopping birds, like the Finch and Redbreast; solemn stalkers, as the Heron and Stork; heavy walkers, like the Raven and the Goose; slovenly ones, like the Grebes and Divers; sedate waddlers, as the Pelican and the Duck; and helpless sliders, as the Auk and Guillemot. We have similar variations among the climbers: our forest carpenter, the Woodpecker, mounts the most slippery stems by a series of springs; the Nuthatch comes down head-first in a similar manner; the spider-hunting Wallcreeper does as his name implies; the Treecreeper is a master-hand at gymnastics, and walks with the greatest comfort on the under side of a horizontal branch; while the monkey-like Parrot is obliged to use his beak to help his claws; the Titmouse seeks to mimic every possible method of climbing; the Wryneck cannot manage to do more than ascend limbs of trees which are off the perpendicular; while the Hoopoe can scarce clamber up a slanting earth-bank. Among the water-birds some are much more privileged than others: the Penguin, almost fish-like in its habits, chooses for its abode places where wind and water rage most fiercely; the Cormorant and the Darter (*Plotus*) live more in, than on, the water; the Auk, or Sea-parrot, dives to a depth of over a hundred feet to the bottom of the sea; Gulls and Terns are, like the Pelican, restricted to the surface of the water; the large Divers ride boisterously away over waves, upon which the Gulls are lightly tossed and cradled, and which the Swan, the beauteous model of the ship, cleaves so gracefully. Thus, some rule the depths; while others only move on the surface. Lastly, flight,—the grandest, the most charming of all movements,—is so diverse that a practised eye is able to recognise this or that bird by it alone: at times a majestic soaring; at others a rushing, swift as an arrow from a bow; a cradling, swinging, fluttering motion; an easy gliding; an onward-hastening; a journeying quick as thought; now a sort of walking flight, quiet and easy; at one moment the waves of the Æthersea rush from beneath the bird, while at others one hears not a sound, not even the slightest rustle; at times the stroke of the wings is powerful, at others not the slightest movement is perceptible; oftentimes this wondrous gift raises the bird to an elevation undreamt of by human beings,—at one moment it nears the plain, at another the ocean, the waves of which lave the wing with their foam as they pass.

The inward spirit may be roused by quite a different set of circumstances, so as to kindle the full power necessary to produce its outward movements, to awaken love's passion, which remains the same in every clime, and to vivify a new existence, without which this inward spirit would become lost or dissipated.

There does not exist an animal possessed of such varied powers of motion as the bird. How are these movements brought about?. We move of our own free will, and yet are completely unconscious how this takes place, for our movements are such every-day occurrences that we rarely take the trouble to reflect upon the ways and means. Few people imagine, even, that every step we take, brings into action a number of muscles of the leg and foot; many never reflect that with each step different laws and forces are brought into play. For this reason it is possibly not unadvisable that we should, in some degree, examine each of the principal movements of the bird somewhat in detail. Those of man can be studied in works published on that subject.

Birds, with the exception of the Auks and Guillemots, do not walk on the sole of the foot as we do, but, like most mammals, on the toes; were this not the case they would not be able to walk so smoothly. However unfavourably their legs may appear to be placed with reference to the body, all disadvantages arising therefrom are obviated by the length of the metatarsus. Now, this is so constructed as to be able to form such an angle with the lower part of the thigh as to throw the centre of gravity of the body between the extended toes of each foot, so that the leg of a bird appears as though it had been bent or broken; this bend is most prevalent among short-legged birds. The ankle is sometimes more or less distant from the toes, and the legs higher or lower accordingly. A bird, however, carries its body in a more or less upright position; and its thighs, which form the least mobile portion of the legs, are placed more or less horizontally. From these there result a series of different styles of walking, concerning which the following particulars may be mentioned. All birds carrying their bodies in either a very perpendicular or in an extremely horizontal position are bad walkers; consequently all those which carry themselves in a position equally removed from these two extremes walk well. Long-legged birds are good walkers, though they move along with measured step; while the short-legged walk badly, or more generally hop. All true runners have comparatively long legs on the average, and carry the tarsus perpendicularly, and the ankle but slightly bent. The principal action takes place in the knees and ankles; and with running-birds is so rapid that the eye is not able to distinguish the individual steps, owing to the outline of the legs becoming confused one with the other by their rapid movement. When moving quickly all birds throw the body very much forward. At each step the bird raises the thigh and tarsus, both up and forwards, it then stretches out the leg, touching the earth about the midst of this stretching motion. With their advance the body is next raised, and, through this movement being performed with a jerk, is thrown forward, by which means the *hinder* portion of the foot leaves the ground, which latter remains, for a moment only, in contact with the *points* of the toes. The result of this is, that with every foot-print of a bird on soft ground we find an exact impression of the *ends* of the toes. Now, should the bird's carriage be very erect, its gait is rendered more difficult by reason of the leg bending less at the knee and the ankle when stepping out, and thus being more extended while in motion; if the carriage be nearly horizontal the whole body is thrown over towards the side opposite the leg which is stepping forward. Birds standing erect, like the Divers, must do so with their legs far apart, if they would keep their bodies properly balanced. Hopping-birds move whilst bending both knees and ankles, and slightly raising the wings, then suddenly drawing in and stretching out the legs; thus springing both upwards and forwards. Birds that hop on the ground stand erect; while those which hop on trees hold themselves horizontally, with their legs much bent. When a bird wants to run faster than usual it makes use of the wings as accessories to the legs, and in such cases its action consists of a series of springing steps, like those of the Ostrich running apace, or a sort of half running, half flying pace, like a harried barn-door Fowl. Some birds run along on the surface of the water, but this must, at least, in the case of very long-toed birds, be covered with layers of duckweed, or some other aquatic plant, so as to give the resistance necessary, while crossing so light a bridge in their wanderings. Others, not handy with their feet on land, move in a similar manner, seeking to keep their foothold or establish their equilibrium with the assistance of their wings; as, for example, the Guillemot, when forced to make its way across a space of level ground. The pace of the most rapid runners among birds is about equal to that of the fleetest mammal.

Climbing requires the use of one, and, according to circumstances, even of two members of the body more than walking,—the beak and tail; though the feet must always do the principal portion of the work. This is effected in a variety of ways in accordance with the formation of the body and the functions of the bird; it may be, with or without the assistance of the beak and tail-feathers. All Woodpeckers climb by means of a series of springs or jumps, but only in ascending, inasmuch as they hang on to the side of a tree by their claws, pressing the tail, which is furnished with strong elastic feathers, against the tree. Before they first make the spring, which is always very short, the tail is so pressed against the tree that it becomes much bent in the middle; they then advance by a hop with the feet, the elastic pressure of the tail assisting the operation. Treecreepers climb in the same manner, although, from their ability to cling-on to the lower side of a limb, they are able to run both up and down. The Nuthatch does the same, simply by means of its remarkably long feet, which are furnished with large hooked claws. The Wallcreeper (*Tichodroma muraria*) ascends, in a similar manner, old over-hanging walls and rocks, but has to assist itself with a stroke of the wings at each spring. The Parrot climbs like his cousin, the monkey, inasmuch as he grasps branch after branch first with the fore-hand, in his case represented by the beak, and then seizing hold with the feet draws the body forward. Lastly, the Tomtit flies from one twig to another, actively grasping these in every conceivable manner with its claws.

In swimming and diving the bird again uses the tail and wings to assist its legs, according to circumstances. The simplest mode of swimming, however, is confined to a movement on the surface of the water: that bird which, on account of its frame and plumage, is comparatively the lightest, is, in the abstract, excellently adapted for swimming. Dead birds, as well as living ones, float on the surface of the water. All land birds have, however, a great fear of water, which is only overcome on occasions of imminent danger; such as, for example, that of a Pigeon, hard pressed by a Hawk, dashing into a pond or river to escape the robber. The feathers of the land-bird are not in the least fitted for swimming; and of this it seems to be well aware: hence the anxiety of a motherly old Hen, which has just hatched a brood of Ducklings; in them the voice of Nature is more powerful than education. It is far otherwise with true swimming-birds; their feathers, in all the variations they present to us, are always so adapted as to make a sojourn on the water both safe and pleasant. Comparing a swimming-bird with a boat, we may consider the legs as oars and the tail as a rudder. A bird, like a boat, floats on the water without the slightest exertion; it need not stir a limb, which a quadruped is, of necessity, obliged to do. Each stroke of the feet has no other purpose than the locomotion of the body, and is in no wise connected with the floating power of the latter. The art of rowing is most thoroughly understood by swimming-birds. First, the foot, the toes of which are spread out at the side, is drawn together, so that the middle toe presents itself in advance of the remaining two or three; at the same time the leg is moved upwards and forwards. With the backward pressure the foot again partially expands, or, when webbed, as fully as this will permit of. While the bird is swimming quietly and steadily the motion of the feet is alternate; when, however, going very fast, their action is simultaneous, which then gives with each stroke of the feet a corresponding forward motion. Should a bird rise up on end, as Ducks often do, to shake the water from their wings, or, in the same position, to attract the attention of its companions by calling out, then a movement of the tail is brought into play, so as to preserve the equilibrium of the body. To effect this the legs are moved from the front to the back, and the tail from back to front, one against the other; by this means the water lying between the feet and tail is pressed downwards, and the bird is raised by the shock of the resistance. With respect to the rapidity with which a bird can swim on the surface of the water, we have seen a great crested Grebe (*Podiceps cristatus*) keep pace with a steamer. To dive beneath the surface every swimming-bird has to give with its full force a stroke simultaneously with both feet. With many true divers this stroke is so powerful as to throw the bird forward over the surface of the water before it disappears head-first in the flood; with others this spring, clear of the water, does not take place. Previously to diving the plumage is first laid as close to the body as possible, so as to lessen its circumference; when again rising to the surface the feathers are, on the contrary, shaken loose, and the bird ascends without the rowing motion; while diving and swimming under water the bird elongates itself as much as possible; many use only their feet for the forward motion, though others use the wings also. The Cormorant, Eiderduck and Diver use the combined method to enable them to reach the surface more rapidly. Flying Divers live almost, without exception, on the sea, and are capable of diving to an immense depth below the surface; they use their wings as fish do their fins. It is wonderful to see our Moorhen (*Stagnicola*) swim and dive, although it appears scarcely fitted at all for the purpose. With some birds the tail is used as a rudder, and in that case it is always long, stiff and elastic; though we cannot determine the assistance it affords in diving, inasmuch as the true fishing-birds, the Penguin and Great Auk, possess scarcely any tail at all; on this account, indeed, we find their feet and wings singularly developed.

The depth to which Divers can descend, and the length of time they can stay under water, varies very much. Among northern birds the Eiderduck dives the deepest, and remains longest under water. From a knowledge of its food, which consists of small, soft-bodied molluscs and crab-like animals living on the bottom of the sea, we have been able to determine both, and have found that the depth is 200 ells (about 400 feet). Usually the Eiderduck remains from four to five minutes submerged, as does also the northern Diver (*C. glacialis*) on rare occasions; sometimes, however, it is said to stop under as long as nine minutes; after that, however, it seems very exhausted. All the birds keep under as long as they can hold their breath; in which case, should they become entangled during their return to the surface, they expire almost instantaneously. In former times the Icelanders used to catch the Eiderduck by means of nets spread under the surface of the water, which they baited; the birds, becoming entangled on rising, were soon suffocated.

Quasi Divers dive when closely pursued, but return sooner to the surface and swim off half submerged, inasmuch as they lie flat on the water, and using their wings, somewhat extended, as oars, advance with rapid rushes. Birds furnished with superabundant plumage are incapable of diving; and they almost prove this by never attempting to do so even when in the greatest danger:—as the Swan, Gull, Albatross, Phalarope and others; especially young birds. The Pelican finds himself similarly situated, by reason of the air-cells in the epidermis.

Some birds dive by letting themselves fall from a considerable height into the water:—as the Osprey, Booby, Kingfishers, several Terns and others; but this class of diving is altogether different from the above. Swooping Divers are, while swimming on the surface of the water, unable to submerge themselves, and can only do so through the momentum given by a fall. They precipitate themselves into the water without using any of their limbs, quickly rising up from it again by means of a few flaps of the wings, and without the help of their feet. With the Booby the force of the swoop is so great that, according to Faber, it not unfrequently dashes its head to pieces against submerged rocks. Lastly, others run under water from shallow spots, and remain quietly walking about on the bottom, like our pretty Dipper (*Cinclus*), which will at times fly through the wildest waterfall.

Flight, the most important of all the bird's movements, can here be discussed only in general terms. The feathers of the wing are laid like the tiles on a roof, one overlapping the other; they are arched, and give a convex form to the upper surface of the wing. By raising the pinion the air is allowed to pass between the feathers, while in its descent they offer an insuperable resistance. This partially explains the fact, that a bird always either rises with each stroke of the wing, or keeps at the same level, and is never in the least depressed by it. The forward movement is attributable to the fact, that all strokes of the pinion do not fall in a perpendicular direction, but slope obliquely downwards from the front towards the back. By this means the wing is so canted as not to present its surface horizontally to the air on rising, but rather to cut through with its edge; moreover, the pressure of the pinion downwards is quite equal to four times that of the upward stroke: this is proved by a simple examination of the respective muscles. The tail serves as a rudder, and is bent somewhat in an upward direction while the bird is rising, and in a downward one in its descent; in turning it takes a slanting position. When soaring or circling, the tail alone directs the course of flight, while the position of the apparently motionless wings determines the greater or less rapidity of the same. The relative rapidity and the nature of the flight is in perfect harmony with the formation of the wing and the construction of the feathers. All birds possessing long, narrow, sharp-pointed wings and close smooth plumage are rapid flyers in a straight line, though unable to diverge from their course with the same quickness as birds with shorter and rounder wings. With the faster flyers the wings over-lap the tail; while with those which can turn quickly the tail generally exceeds the wings in length. Good flyers often have the tail forked, although the contrary sometimes occurs when the tail has long centre feathers. Large, broad, rounded wings are well adapted for rising, and for long and easy soaring at great elevations; but they render descent difficult. Those birds, however, which carry long pointed wings can rush with them half expanded from a considerable height. Short round wings render flight more difficult, and make it necessary to use very rapid and strong strokes. The greater or less amount of noise made in flying is caused partially by the hardness or softness of the pinion-feathers, and partly from the relative rapidity or slowness of the strokes of the wings. Quick flyers move with a rushing whistling sound; slower flyers silently: the former motion is found with short-winged, and the latter with broad-winged birds.

To enable a bird to fly with great velocity it requires a head wind, or the reverse of what is desirable for a ship; it always prefers to fly against the wind, and soon becomes tired when flying for a long time with the wind.* The reason may be sought for in this circumstance, that the opposing breeze fills the under side of the arched wing, and thus lifts the bird; while, with a fair wind the wings are pressed down. This explains to us how birds can continue to circle at a high level without moving the wings or even ascending higher. The act of starting to fly, which is mostly preceded by one or two springs, can only take place, by many birds, with the head to windward. The velocity of flight is a question which has as yet received but little attention; though we know that it is the fastest of all animal movements. It is estimated that a salmon will run 86,000 feet in the space of one hour: if it were to continue swimming at this rate it would circumnavigate the globe in a few weeks.* These suppositions are merely based on a calculation of probability, and not on actual observation; so it is possible that this statement is somewhat exaggerated. Even were the sum thus given correct, this scale of rapidity is still far behind that of flight. An express train runs at the rate of seven† German miles per hour; and a distance of ten has been attained in a like time: this, however, is only an average rate of flight for a bird. The pace of the Crow exceeds that of ordinary trains, although this bird does not belong to the class of rapid flyers; and with every effort the locomotive lags far behind the domestic Pigeon. Carrier Pigeons have been known to traverse a distance of fifty-six German miles in five hours and forty-four minutes; and flights of thirty-five German miles have been covered in less than three hours. This represents a rate of 280,000 feet per hour, which surpasses the speed of the salmon in the proportion of three and a half to one.* The Pigeon again is, in the velocity of its flight, far behind the Falcon, and still more so in comparison with the Swift (*Cypselus*). The larger varieties of the former will strike the fleetest Pigeon, unless it is able to obtain shelter, and during the chase, cover great distances with inconceivable rapidity. Montagu calculates the speed of our Peregrine Falcon (*F. peregrinus*) to be at the rate of 800,000 feet an hour. I, myself, have often observed with what extraordinary rapidity the Ger Falcon dashes down from a height, so that this large bird appeared like a shadow, reminding me of an arrow in the air, or a shell from a howitzer. This rapidity of movement is, probably, surpassed by no other bird; though the direct flight of the Ger Falcon is certainly not the most rapid we can find. The true Swifts here carry off the palm: these are in reality "clippers" of the air, the only place, however, where they are at home; on the earth they are strangers. It is only when roosting or breeding that they approach it, and then only the higher cliffs and walls, to the sides of which they can cling with their sharp claws, and into whose rifts and clefts they can crawl. On the level ground they can scarcely walk at all, and can only rise again by means of a jerking movement of their long elastic wings. So much the more active and nimble are they, however, in the air. It is in the air that they pass their real life, with its cares and crosses. In from three to five days they fly from Germany to the interior of Africa, as I have gathered from frequent observations; and at the close of autumn make pleasure trips to Southern Europe. In their way they are not less wonderful than the Frigate bird (*Trachypetes Aquila*), so often beheld with admiration by poets and naturalists, and which represents and characterises the mighty ocean, as the Swifts do the less majestic mainland. This bird the sailor sees in the lower degrees of latitude, two hundred German miles from any island, safely and proudly soaring above the surging waves, which, it is alleged, are never chosen by it as a resting-place for the night: it must, therefore, before sun-down have flown such a distance to reach its roosting-place as to us would represent a long journey. Its great power of motion allows it to forget distance and to laugh at the storm; it could, if it would, encompass the earth, not in weeks, but in days!

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* This statement seems contradictory when we remember the immense velocity at which "driven" Grouse or Partridges fly. Any sportsman, who has shot driven birds, will feel but little disposed to accept this assertion, the more so that, as a rule, driven birds almost always travel *down* wind. Another occasion, where the difference of velocity is easily observable, is while sitting watching rock birds, Guillemots and Puffins, when flying to and fro their breeding-place; the moment the bird turns *down* wind increased velocity is immediately perceptible. A third case also presents itself to us:—Snipes generally arrive in the Essex marshes with a north-easterly or easterly wind, and yet they come from the North of Europe to us; perhaps the early and severe frosts of Norway compel these birds to fly *down wind* on their trip to England. Lastly, how could the fragile warblers beat to windward?—*W. J.*

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* From Hartwig's 'Leben des Meeres,' 4 Aufl. S. 174.—*Dr. Brehm.*

† It may be well to observe that this moderate rate of travelling is confined to foreign lines.—*W. J.*

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* Rogers describes the Pigeon's flight in the following lines:—

"Led by what chart, transports the timid Dove
The wreaths of conquest, or the vows of love?
Say, through the clouds what compass points her flight?
Monarchs have gazed, and nations blessed the sight.
Pile rocks on rocks, bid woods and mountains rise,
Eclipse her native shades, her native skies:—
'Tis vain! thro' Ether's pathless wilds she goes
And lights at last where all her cares repose.
Sweet bird! thy truth shall Harlem's walls attest,
And unborn ages consecrate thy nest."

During the siege of Paris every one has experienced how useful these birds can be made.—*H. M. L.*

Truly wonderful is the endurance shown by the bird in motion. It would seem as though its muscles were of steel, and unsusceptible of fatigue. Most birds, as their migration proves, are capable of continuing their flight for days together without any perceptible pause, and, what is equally remarkable, without fatigue. Soaring birds, such as Vultures, Eagles, many Falcons, Swallows, Gulls and Terns play about in the air for hours at a time, with no other object, as it seems, but their pleasure. Many are compelled to fly over great distances in order to find their food; others never rest,* such as the Frigate bird and the Swallow; yet they are always as fresh and joyous in the evening as they were in the morning. There are, indeed, those less privileged that are unable to do this, and in untoward circumstances they become so dead-beat as to lose all further use of their pinions. All birds that shun the presence of man or predatory animals lose their self-control, and allow themselves to be taken by the hand. In storms migratory birds often seek ships for shelter and rest; migrating Quails reach the sea-shore from the opposite coast quite powerless; and the red-legged Partridge (*Perdix rubra*), as I have been again and again assured by a Spanish sportsman, can be taken in pursuit, if it has previously been flushed several times together in rapid succession, and especially during the hot summer months.† Swimming birds and birds that run, if they are continuously hunted by several persons, may at length be overcome by fatigue: but this kind of sport requires much time. The Ostrich (*Struthio camelis*) shows this, for it can only be outstripped by several relays of riders mounted on steeds fleet as the wind in pursuit along the desert, because it always has its eye upon the motions of a single pursuer; for while one huntsman follows the bird in all its motions, the rest cut off all the angles of the chase. As a general rule, the endurance of all birds is remarkably great. The

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* A rather broad assertion.—*W. J.*

† What Dr. Brehm states here, with regard to the red-legged Partridge being taken by the hand, has been known to occur in the hunting-field in this country; and I have heard it stated by several people in Essex, that in the southern district of the country, parties of eight or ten persons are not unfrequently made up, at which these birds are regularly ridden down on horseback, and as many as several brace taken in the course of the day's sport: heavy land and wet weather are, however, indispensable for this amusement, the birds being unable to run, by reason of their feet becoming clogged with the soil.—*W. J.*

Vulture flies; the Grebe dives; the Duck swims; the Woodpecker climbs and taps; the Hen runs about the livelong day, and, after a few hours sleep, is recruited for the next morning. The whole life of a bird is one unbroken movement; the more it moves the happier it is; only sick or tired birds are quiet and still; the healthy live their true life only when they have scope to move themselves, in accordance with their heart's desire.

CHAPTER III.

THE VOICE.

"'Tis always morning somewhere: and above
The awakening continents, from shore to shore,
Somewhere the birds are singing evermore."
LONGFELLOW.

THE voice is still motion; but no longer entirely a corporeal one. By it the spirit moves, through the agency of the body, as a machine. The spirit creates and poetises the measure; while the result is clothed by the body with tones,—aye, words! The bird so highly gifted, as an animal, is also endowed, as it were, above all other created beings with an intellectual voice. It understands how to sing; and its song is speech! Mammals give expression to their feelings through the instrumentality of sounds; still these cannot be termed either song or speech; and, with the exception of man, the bird alone can do so in tones agreeable and touching to the ear. The distinction to be drawn between the two is, that *man* envelopes *thought* in melody, and the *bird*—*feeling*; and yet birds are possessed of thoughts and words!

To examine these gifts from a physical and physiological point of view would carry us too far. It suffices that we should seek to make ourselves understood, in our explanation of the singular properties of the bird's voice.

These properties consist of strength, fulness, roundness and elasticity; qualities which are only accorded to man in a higher degree. Fulness and strength have their foundation, probably, in the extraordinary means of inflation, which belongs to the bird, coupled with the possession of two larynxes; the first renders possible the excessively great, though quite inexplicable, expenditure of moving air; and the latter gives strength to the tones, principally, perhaps, by means of the "drum," that singular cartilaginous cavity in the wind-pipe, which apparently can have no other meaning. The flexibility of the voice is owing to the extraordinary mobility of the larynx, whose lesser ligaments can produce an increasing altitude of each tone through an augmentation of their vibrations. The richness and beauty of tone give meaning to the bird's voice. There are, indeed, many birds which seldom utter other than shrill and shrieking tones; these, however, are comparatively few, and are, at all events, not very protracted. Absolutely dumb birds are unknown. The greater number possess voices so rich and so varied in tone that to them a language bordering on conversation could, in a broad sense, be possible. Birds not only speak to, but even amuse, each other. They have a number of words or sounds denoting different sensations, impressions and ideas; and these sounds are so marked and so expressive as to be understood, not only amongst the same species, but convey a meaning even to man himself. Every observer understands the language of a bird he is acquainted with; for he soon gets to learn the varied tones of tenderness, love, joy, desire, health and satisfaction, and how to distinguish them from sounds expressive of aversion, hate, sadness, suffering, restlessness and discomfort. Some of these sounds have, under the names of decoy and warning tones, received well known designations, by reason of their being the most common. But besides these, many other words in the language of birds might be pointed out; for tones expressive of the same meaning are always very much alike in different species. An instinctive perception of the meaning of these sounds generally gives an expert the correct interpretation, the more so that the sound of the words (an expression I will use) are based upon the same conditions as the language of man. The sharp short cry of a bird invariably betokens fright; while a long-continued repetition of a cry denotes pleasure; but a slight abrupt sound is always a note of warning; whereas the same tone, if sustained for any length of time or reiterated, undoubtedly expresses satisfiaction. The notes denoting tenderness and love are quite as melting as, and often much more so than, with man, and are expressive of greater self-devotion. The cry of pain is a low sound within the bird's throat. Contempt and hatred find their expression amongst birds in different sounds, even with those birds in whose well-toned song not a single discord is to be detected. The Nightingale shrieks abominably when in a passion or wishing to express her hate. We need scarcely wonder, then, that the observer can very soon learn to understand birds hitherto unknown to him, although he can hardly explain how he does so.

To what extent birds can understand a language, common to all, one can see plainly in places favourable to gregarious assemblages of different species. Here the cleverest and the shyest of those present very soon take the lead of the community. The warning cry of the Godwit (*Limosa*) is sure to alarm a whole flock of waders of every description along the shore. The same expression from the throat of a Rook scares a flight of Starlings. The Pheasant pays attention to the warning cry of the Robin. By the borders of the African lakes I learnt, from my inmost heart, to detest the spur-winged Plover (*Hoplopterus spinosa*), for the reason that it always acted as sentry to all the marsh- and water-birds in the neighbourhood: these, ever difficult of approach, it never failed to inform of my presence in the clearest manner possible. All his *protégées* can interpret his call; should he be only quarrelling with those of his own species, the other wild-fowl would remain perfectly unconcerned, yet the moment his warning cry was heard they took wing. In a similar manner many birds make themselves understood by others not of their own class, with whom they have little or no resemblance; yes, they will even act as monitors to creatures belonging quite to other divisions of the animal kingdom. The crocodile does not disregard the call of the Ziczac, or black-headed Plover (*Hyas Ægyptiacus*), his "watchman," as the natives call it.

This faculty of speech is common to both sexes, though not in the same degree. In the bird-world the male is the talkative, and the female the silent, member of the family; it is only the reverse in cases where the female almost entirely undertakes the bringing up of the young: but in this case the mother requires also a more extended vocabulary. The domestic Hen has a much richer language than the Cock, and even adds thereto other quite peculiar sounds—words—when she has a brood. Generally, however, the voice of the male is more flexible than that of the female; it is, also, usually of a higher compass than hers.

Birds of different species often prattle together in the most winning manner. The chatter of a Magpie is manifestly much more like a gabble than a song, even though the male has the louder say. There are, however, many birds which can converse much more fully. The male and female grass Parakeet (*Melopsittacus undulatus*) chirp together and caress each other in the prettiest way imaginable. With the Wryneck (*Yunx torquilla*) the two sexes answer one another regularly. In some species male and female often join their song in one cadence. While roaming the primæval forests of the interior of Africa, I have heard with astonishment the full rich-sounding thrill of the red-breasted Shrike (*Lanius erythrogaster*), one of the most gorgeous birds of the Upper Nile; but on each occasion it was accompanied by a disagreeable rattling noise, such as we are accustomed to hear from our Golden Oriole. It was only quite by accident that I learnt that these flute-like tones were whistled by the male only, while the female, with her rattle, kept up a regular accompaniment, artistically and in good time, like a well-trained musician. Of the truth of this observation I have often satisfied myself; for I have sometimes shot the male of a pair first, after which I have only heard the rattle; and, again, I have shot the female first, and then have heard the whistle only. We find the same combination occurring between the two sexes of a cousin of the above (*Telephonus œthiopicus*), a Shrike inhabiting Abyssinia; the female completes the strophe of the male, the two together forming a beautiful flute-like sound. The domestic Goose, with the well-known "gik," "gak," attests this fact; for the Gander calls "gik," while the Goose cries "gak."

What has just gone before affords us sufficient proof that the bird, above all other animals, has the most perfectly-developed voice; though we but first realise its value when we subject its richest product—song—to an analysis. This heavenly gift has, unfortunately, not been awarded to all birds alike; Nature, ever just in her dispensations, has principally accorded it to the smaller and most modestly-adorned among the land-birds. Others have received greater stature and more gorgeous plumage. We are, however, acquainted with some songsters from among the middle-sized and bright-coloured birds, but they are rare exceptions. The same justice is shown in another manner, namely, the north is the true home of the singing bird. In the south, no doubt, rich colours and loud notes are to be found in abundance; many screaming, but only a very few singing, birds. We, on the other hand, are more fortunate, who may call the king of songsters our own: we can speak of wood and forest with ecstacy, other than that of the southerner; for our song birds, indeed, form the chief poetical element in the picture; to them we owe one of the principal attractions of forest life. Nevertheless, we ought not, perhaps, to say that our north alone is blessed with these pets of creation; for in all the remaining quarters of the globe fine songsters are to be found. Nature, ever generous with her gifts, seems only to have acted with injustice in one respect: the female sex, among birds, is deficient in song. Despite the pretty and pensive ideas of tender-hearted poetesses, who permit, among other things, feathered mothers to sing charming lullabys to their chicks, we must yield to truth, and insist upon the fact that the males alone are gifted with the power of song, the females never. The poor creatures try, it is true, sometimes to sing a bar or two, yet it never amounts to a song, and always remains a bungle. The wee hen-bird, though her little bosom may be bursting with poetic love-thoughts, can only impart them to her lover and the world, in simple, but tender, tones. It is of the male bird only, that we can say he composes poetry; for it is thought alone, out-spoken in song, which can be called poetry, although the assiduous labours of the female to build the home and rear the callow brood may appear to many more poetical than the slight contribution of song to the work. Just as much as the female is surpassed in bodily beauty by the male, as little can she rival him in the gift of poetry; and this is a clear indication of the elevation man occupies in comparison with birds; for with him, from time immemorial up to the present day, the female sex has, as all know, always been called "the fair or fairer," and is in no way inferior to the male sex in powers of composition, as the treasures of modern poetry can testify.

The gift of song varies greatly in different birds. Each species has its characteristic tones and definite compass of voice; each blends the individual notes in a peculiar manner into strophes, and the strophes, again, into the whole melodies. From this arises natural song, which may, however, be rendered very differently, according to the talent of the performer. Some species sing their own melodies, and those alone; others, combine therewith many strophes belonging to others; moreover, in the first case, the song always differs in different localities. An expert will immediately recognise any singing-bird from its note, without seeing the creature itself, with as much ease and certainty as he can distinguish by their sounds different musical instruments one from the other. It is as difficult to confound the song of a warbler with the note of a finch, as it would be to mistake the flute-like tones of a Blackbird for the twitter of a Swallow. A safe guide for such discrimination is found in the relative volume, roundness and strength of the tones. Many birds of different species have a very similar song, except that the position of the accent and the union of certain strophes afford an easy clue to the difference. The Chaffinch and the great Tit both utter the sounds "fink, fink;" but the accent and ring is so different in the two species that the practised ear can at once decide which of them is calling. In the same way an adept discriminates the note (hoid) of a Redstart from that of the Willow Wren (*S. Trochilus*); he can readily determine by ear what bird is crying "tak, tak," although it is common to them all, whether Blackbird, Thrush, Blackcap, lesser Whitethroat or Sedge Warbler, and so on.

Songsters are also distinguished by the compass of their voice; while the leaders among singing birds, such as the Philomel Nightingale (*S. philomela*) and the common Nightingale, have a compass of several octaves, the Whitethroat and the Lark can command only four full tones, but both know how to combine and blend them in so incomparable a strain that one can listen to them for hours together with ever-increasing delight. Many birds are entirely without the gift of *song:* thus, the brown-headed Timalia pileata, of India, only sings the five notes, C, D, E, F, G, in the diatonic scale, several times in succession in full purity, and without introducing half or quarter tones; it is all they can do to reach a sixth tone (*Horsfield*). Birds acquire, by training, a much greater compass of voice in comparison with what they at first possessed. I have heard a Bullfinch piping the German song, "Von hohen Olymp herab ward uns die freude," a song having a compass of ten whole tones, with an accuracy perfectly exquisite.

We may determine the nature and value of a bird's song according to the richness of its tones and strophes, and also the manner of their combination into melody. When we find single strophes distinctly composed by the bird, executed in a sharp and definite manner, they may be considered as forming a composition, inasmuch as it is a distinct *motivo*.* On the other hand, when the notes are continually changing, and never form a distinct strophe, it is called a song; the mere number of tones and strophes has no bearing on the question. The single strophe of our Chaffinch is as much a composition as the Nightingale's, with twenty to twenty-five in it; on the contrary, the Warbler's simple song, and the Lark's rich one, are equally songs; for the strophes of the former are clearly and distinctly rounded off, while those of the latter are obscure and vaguely intermingled. Now, the fuller and purer the tones, and the richer in strophes the whole melody, the higher is the rank of the songster: this rank depends principally upon the presence or absence of disagreeable tones. The Nightingale, Skylark, and Woodlark (*A. arborea*), the Greater Whitethroat (*S. cinerea*), and the Garden Warbler (*S. hortensis*), when they sing use none but pleasant and melodious notes; whereas the Melodious Warbler (*S. Hippolais*), although it sings exquisitely, introduces many a jarring note into its strophes; it is by this very defect that the Blackbird and the Thrush mar the harmony of their wondrous wood-song.

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* The German word "Schlag," in contra-distinction to "Gesang" (song), has no real equivalent in English; and thus the translators have been obliged to express the author's meaning somewhat at length.—*W. J.*

There is not a single songster which utters each separate strophe always in the same order in succession, but invariably weaves them together in an ever-varying sequence; and it is exactly on this account that a bird's natural song is so far superior to any air it may have learnt by rote; and hence the bird's power of rendering in its song the heart's impulse of the moment, though the outline of the song is the result of previous composition, appears to us so marvellous. The bird meditates upon and rehearses its composition long before it is perfect; at first it practises single tones gently, and then more forcibly. When vying with another songster of its own species it essays to interweave into its own song the most exquisite parts of its rival's composition. After a long season of continued silence, the bird first tries its throat in secret, and endeavours to reproduce the old notes, if possible, with still greater fulness than ever. Many a Philomel Nightingale requires a month's rehearsal to perfect a composition, and at the outset utters the strophes in so low and confused a manner, that they may be called mere songs rather than compositions. The finest songsters, after the yearly break, are not able to reproduce every strophe in their composition without regular study and practice.

All singing birds are instructed in their art by the elder males. Nature contributes, likewise, her share of instruction; thus are explained those frequent variations in the song of the same species in different localities. The melody of the gloomy pine forest is of a different character to that of the leafy coppice; the mountains are richer in tone and poetry than the plains; the south has other sounds than the north. All this may have its influence on the songs of birds. The great Sedge Warbler (*Calamoherpe turdoides*) sings Nature's songs in a most unmistakable manner. In its melody we recognise the rustling of the reeds, the murmur of the waves, and even the croaking of the frog, which latter it probably regards as its first instructor. The songs of many other birds are influenced in a similar manner. The elder of their own species, however, remain their real singing masters. Young birds, when captured, only learn to sing correctly when placed early under tuition; if this is neglected they always turn out bunglers. Good masters generally produce good scholars; still these latter are easily spoiled by contact with bad performers. The old proverb, "Evil communication corrupts good manners," holds good with singing birds to its fullest extent; the best of them allow themselves to be beguiled into imitating the bungles of inferior performers, instead of leading these to better their style. Two or more singing birds excite competitive singing on all sides; but not unfrequently one vanquishes the other so thoroughly, that the latter dares only to sing in an undertone, while the other announces his victorious jubilee in a peal of song. The song of a bird is an undoubted test of its being in good health and spirits. One and the same bird will sing at one time loudly and ardently, and at another softly and sadly: it either rejoices or laments in its song; when courting its mate, the beauteous melody rings with all the ardent fire and joyousness which pervades its whole being; except at this time a bird is generally incapable of singing, or if it attempts to do so is able at the most to bungle.

Some birds not only take strophes from the songs of their own species, but borrow from strangers, and even pick up extraneous sounds and noises. The best known among these is our mocking-bird, the Melodious Warbler (*Hippolais*) which, however, only imitates singing birds. The blue-throated Warbler (*Cyanecula Wolfii*) intermingles with its own some notes and strophes of the songs of the Nightingale, Whitethroat, Reed and other Warblers, as well as Finches, &c., besides which, however, it has many harsh and disagreeable tones. The red-tailed blue-throated Warbler (*C. suecica*), which breeds in Lapland, is there called the "Hundred-tongued," owing to its great imitative capacity. The Jay (*Glandarius europæus*) is not so fastidious, he thinks the shrill scream of the Hawk so beautiful that he tries to imitate it; he mimics the Crow and the Magpie, aye, even the call of the Capercallie in the breeding-season, in his love of mimicry. Our old friend, the Starling, goes even farther, inasmuch as he often introduces some nonsense or another in his song: this, at any time, is little else than sociable chatter, without much sense or meaning, though full of mirth and jollity; sooner or later, however, he is sure to make a variety of whimsical additions to his repertoire. First, the comical fellow will try and whistle back the beautiful and rich-toned call of the Golden Oriole; then take up the cry of the Kestrel, the Wryneck (*Yunx*); perhaps, also, catches that of the Rook or Jackdaw, until he has learnt almost every bird-call within hearing. All that he has already accomplished does not suffice; he tries to imitate other sounds and noises: lastly, he learns not only to mimic with the greatest exactitude the calls of all sorts of animals, but the creaking of doors, weather-cocks, carts, the clappers of a mill, the sound of a saw at work, and many others which he may hear in the neighbourhood. Parrots sometimes become unbearable from this same desire and capability: they mew like cats, bark like dogs, cough like human beings, squeak like sucking-pigs, cackle like geese, and perform solos on a penny whistle, after the manner of noisy boys, producing such hideous dissonance that they at last become nuisances to the most indifferent person. On the other hand, it is all the more amusing to hear them utter words and sentences: of these I will give examples further on.

The most perfect "artiste" in this way appears to be the American Mocking-bird (*Mimus polyglottus*). It is such a highly-gifted creature that Audubon considers it worthy of the title, "The Queen of Songsters." "It is neither the soft tone of the flute," says this inspired naturalist, "nor the note of any other instrument, which strikes the ear while listening to its song; it is the rich ringing voice of Nature herself: the full round tone of this song, its different inflections and gradations, its compass and the brilliancy of its execution are unequalled. There exists, probably, no bird on earth possessed of so many gifts, in regard of vocal capacity, as this Queen of melody, schooled by Nature herself. Europeans have asserted that the song of the Nightingale equals that of the Mocking-bird. I have heard both, and cannot hesitate to acknowledge that some single notes of the former are as beautiful as those produced by the latter; but to compare the Nightingale's complete musical production, as a composition, with the finished gift of the Mocking-bird is, in my opinion, absurd."

Connoisseurs of the capabilities of European singing birds are of an opinion quite different from that of Audubon;

at the same time they acknowledge to its full extent the peculiar gift of the Mocking-bird—mimicry. All observers, without exception, relate the most extraordinary stories of this bird. The voice of the Mocking-bird is, according to the statement of that reliable naturalist, Wilson, capable of every change. It can produce every imaginable sound, from the clear soft notes of the Thrush to the wild scream of the Vulture. The Mocking-bird follows with the greatest fidelity the measure and tone of the songster whose lay he has stolen, but generally excels it in power of expression and sweetness of execution. In its native woods no other bird can vie with it: its songs are various without limit. The listener might often fancy that he hears a number of birds singing, which had agreed to do so in company. This one songster will deceive the hunter, and even birds themselves: his repertoire is derived from the locality that he inhabits; in the open forest he imitates the birds around him, in the neighbourhood of men he interweaves with his song all those sounds which are heard in the farmyard. In captivity this bird loses but little either of its capabilities or perseverance. "It is impossible," as Wilson says, "to listen to it without interest." It whistles the dog—"Cæsar" jumps up, wags his tail and runs to his master; it will squeak like a frightened Chicken, when the old Hen immediately rushes out with ruffled feathers and hanging wings, clucking all over the place after her brood, which she imagines to have been attacked and would fain shelter: the barking of a dog, the mewing of a cat, creaking of a passing cart; these all follow one another with the greatest fidelity and quickness. A song once learnt, no matter how long ago, is repeated correctly and without instruction. The lays of the Canary-bird and the

Cardinal are so admirably rendered, even improved, that these, ashamed of their inferiority, become silent; while the Mocking-bird, pleased with his victory, continues singing with renewed vigour.

"These endless changes, however, utterly mar the bird's natural song. The rendering of the splendid melody of the Wood Thrush is suddenly interrupted by the imitation of a Cock crowing; the song of the Bluebird is interwoven with the twittering of the Swallow or the cackling of Hens; and the simple strain of the Migratory Thrush is jumbled up with the woeful call of the Whip-poor-Will."

Thus, we find that while imitations of the songs of other birds, and airs taught by rote, have their disadvantages, the natural and spontaneous melody of a bird preserves its full value. For this reason the Philomel Nightingale (*Ph. major*) and the Nightingale ever remain the kings, or rather the king and queen, of our band of feathered songsters: they stand unrivalled, neither surpassing the other. The Nightingale possesses ardour, with the most melting notes; and its cousin, strength and fulness of tone. The warbled composition of the latter is a majestic "Andante," while that of the Nightingale is an exquisite "Allegro;" one vieing with the other in richness of notes and strophes. They form the poles of one and the same entity: the Philomel Nightingale represents manly power in song; the Nightingale, female grace. They are rightly entitled king and queen, so to speak; he, the king, and she, his queen, though both songsters be of the same sex. They fill every heart with their heavenly strains. Careful observation proves that they warble both in major and minor keys: soft and sad, lively and joyous, earnest and tender, loud and low;

these evoke, by wood and streamlet, the fairy spells of night and evening, with the weird beauty of their melody.

The whole remaining train of our home songsters are the liege subjects of the august pair. In accordance with the general opinion of connoisseurs they rank in the following order: next, the Garden Warbler; then, the Sedge Warbler, the Blackcap, Whitethroat, Barred Warbler (*S. nisoria*), Woodlark, Skylark, and the Melodious Warbler; after these come the wood songsters,—the Song Thrush, Blackbird, Golden Oriole, Robin, Hedgesparrow; and lastly, the Blue-throated Warbler (*S. suecica*), Chaffinch, Linnet, Goldfinch, Siskin, Crossbill and others. This order of precedence is altered, more or less, in accordance with the individual taste of the fancier. In addition to the above-mentioned sorts, which are almost all equally to be found in Southern Europe, we find there the Blue and Rock Thrushes, White-tailed Wheatear (*Saxicola leucura*), and Calandre Lark (*Alaudra Kalandra*), all which are held in high estimation.

Owing to our still very limited knowledge of the life and habits of non-European birds, we need not be surprised if most foreign singing birds are yet unknown to us. It scarcely admits of a doubt that besides the Mocking-bird there exist still other exquisite songsters to be discovered. Observing travellers have remarked some, which they praise in a high degree.

"Amid the outspread wilderness," says Waterton, "usually upon a dead branch of some ancient Mora tree, far out of gun-shot, the Bell-bird (*Chasmorynchus caruncculatus*) is to be seen. No sound or song of any one of the winged inhabitants of the forest, not even the clearly-enunciated call of the Goat-sucker (Whip-poor-Will), is productive of so much astonishment to the hearer as the tones of the Bell-bird. Like many others of the feathered tribe he greets both morn and even with his song; and yet, when the ardent sun's rays lull all nature into stillness, his cheerful tones ring through the silent forest. One hears the notes, and then there is a minute's pause; again, the bell-like sound; then another interval of silence; a third time this takes place, when, after a pause of six or eight minutes, the song bursts out afresh. Acteon would turn from the wildest chase; Marie cease her evening hymn, —Aye! Orpheus, himself, would forego his lute to hear this bird—so full, so fresh, and so romantic is the ring of his melodious song."

"No song," says Schomburck, "no note of any single one of the feathered denizens of the forest has ever caused me such astonishment as the clear tones of the Bell-bird. That the birds of Guiana have the gift of speech, I had already discovered with my first steps in this extraordinary portion of the globe; but such tones, until then, it had never been my lot to hear."

There is a similar songster,—the best, perhaps, in the forests of South America,—the Cayenne Wren (*Cyphorhinus cantans*), allied to our Wren (*Troglodytes*): it is often heard, but rarely seen. Pöppig writes thus of it:—

"Listening, one remains, at the same time, rooted to the spot, as its notes, which can only be compared to the sound of a small glass-bell, continuously modulated, with simply the strictest regard to the intervals, are blended into one regular melody, which falls lightly and slowly on the ear from the topmost branches of the trees. There is something so indescribably soft, one may say ethereal, in this bell-music, the charm of which is enhanced by the desert stillness of the broad forest, and the invisibility of the excessively small singer. On no consideration could one kill the little songster when discovered. In Lima it is spoken of as one of the most remarkable inhabitants of the Eastern forests; and the oldest authorities on these regions make mention of it with admiration."

The woods and plains of Australasia are not entirely destitute of sweet sounds, for among the numerous noisy screamers of these regions a few excellent songsters are to be found; the Poë or Tuï (*Prosthemadera circinata*), said to inhabit New Zealand, is one of these. Rochelas gives the following account of this bird:—

"Among the singing birds of the Island there was one which distinguished itself from all others, as much by the harmony as the charm of its soft song, which really appeared to us not to be compared with that of any other bird. It has been brought several times to Port Jackson, where it excited great admiration: the settlers have named it the 'Organ-bird.' I believe it to be exclusively an inhabitant of New Zealand, a charming denizen of the romantic desert tracts of that Island. It is difficult to say too much of this wonderful bird, when it is asserted that no songster of our European woods can compete with it. I consider the song of the Nightingale, much as I love it, to be far surpassed by the strains of this bird, and must confess never in my life to have listened to a bird so rich and enchanting in its tones."

Upon the capabilities of Australia, in this respect, I need not enter into details: it is sufficient that I assure my readers that we have heard much in favour of her songsters; but at the same time I must remark that in this singular quarter of the globe there are some which, taken in the true sense of the word, do not sing at all! Some of the Parrots in New Holland warble very prettily, much better, indeed, than many birds possessed of the full development necessary for this accomplishment. The serenade, with which the elegant little Grass Parakeet entertains his spouse, resembles a low murmuring conversation rather than a song. The most curious of all songsters is the Lyre-bird (*Menura superba*), not only actually a singer, but a mocker, a fact recently discovered.*

Africa does not appear to be entirely deficient in woodland vocalists; but, as far as my experience went, I only met with one thoroughly good songster in the plain-coloured Bulbul (*Sycnonotus Arsinoë*), which is to be found south of Upper Egypt, in almost every cluster of scrub or palms: it delivers the few strophes of its song with much variety and fire, indeed, not unlike our Song-thrush (*T. Musicus*), though the song of the latter far surpasses it.

I must not omit to state, however, that in my last journey to Abyssinia I met with another excellent songster, the Red-fronted Warbler (*Dyemoeca rufifrons*): he warbles his fresh rippling lay with much perseverance and energy; in these qualities he much surpasses his fellow-performers. Gordon is enchanted with the song of a cousin of the above, the Fantee Warbler (*Melocichla mentalis*), an inhabitant of Western Africa. The "splendid" melody of this bird reminded him more than anything of the woods and copses of his English home and their bright minstrels. "If," says he, "at sunset, during the rainy season, one takes the narrow footpath leading through luxuriant jungle, in the neighbourhood of Cape-coast Castle, one is charmed on all sides by the melodious and oft-repeated flute-like song of this bird." Thompson, also, mentions the Oriole Babbler (*Hypergerus atriceps*) as being possessed of notes agreeable as they are varied. "At times," he says, "one can almost hear him catching up the burden of some native melody." Among the African Thrushes, Chats and Fly-catchers, some very good performers are to be met with; and a few passable ones among the Finches (*Amadina*) and Widow-birds (*Vidua*). That all the gorgeous birds of Africa do not belong to the long list of screamers, is proved by the Angola Pitta (*Pitta Angolensis*), of the West Coast, which is held in such high estimation by the natives, that they seek to honour any aspirant to poetical fame by bestowing its name (Pulih) upon him. The pretty Sun-birds (*Nectarinea*), which are often held to represent the Humming-birds, also go to prove this, while the latter only give utterance to shrill stridulous notes. Like our Starling some members of the (*Lamprotornis*) family also sing; and one species, which I have named the Rock Starling (*Pilorhinus albirostris*), surpasses it. We are told that several South African Drongo-shrikes possess powers of mimicry in a high degree. South Africa, in general, appears to be well provided with good songsters.

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* According to Mr. Gould, our best authority on the birds of Australia, M. Superba produces "a loud liquid call," as also "a low sparkling note," quite different from the above. He makes no mention of the Lyre-bird as either a songster or a mimic.—*W. J.*

The song birds of Asia are probably not in the least inferior to those of Europe; indeed, in the northern part, there are many species common to both regions; but there are others, also, which can only be looked upon as occasional visitors to our quarter of the globe. Among the latter there is a Nightingale (*Calliope camtschatcensis*) which is celebrated for its singing powers, and is often caught and caged, especially in China. Kittlitz tells us that its song is full in tone, but intermingled with an indistinct twittering melody. Radde says that it cannot, in any way, be compared with our Nightingale:—"It does not possess that low gurgling rattle, followed by the deep powerful whistle of our bird; and thus cannot be confounded with it: it is a low plaintive strain which is wafted on the ear." This bird sings not only in the day-time, but, also, with greater energy during the bright, still mid-night hour, so peculiar to its native land, filling the desert-swamp with life and song. The forests of the Himalayas afford shelter to numberless songsters, among which there are many fully equal to our own; some of the Thrushes which inhabit this district are said to be splendid singers. The "Schamak" (*Kittacincla macroura*) may be considered the king of Indian songsters; it is a fine performer, belonging to the family of the Stonechats (*Saxicola*). This bird is dispersed over a large portion of Southern Asia, and is often kept in confinement. The natives listen to its song with ecstacy, and even Europeans speak of it with admiration. Among the assemblage of woodland minstrels, so numerous in Southern Asia, we must not be astonished to find some highly-gifted members. Notes and observations on the lives of these birds are, however, still wanting. India is, also, not without her representatives of the mocking fraternity, who make free with the songs of their neighbours. The Drongos can almost vie with the American Mocking-birds; besides which there are several Bulbuls (*Pycnonotus*), and others, masters of the art of mimicry.

Among those birds which do not sing there are many whose voices are, more or less, singular, not to say unearthly. All nocturnal birds distinguish themselves in this manner from the diurnal birds: their voices always bear the impress of night; they are melancholy, gloomy, horrible and forbidding. Owls—on account of their often really horrible screeching, groaning and miauling—have become objects of fear and dread. The more inoffensive night-birds, also, make doleful and repugnant noises. The Scissor-billed Tern (*Rhynchops*), nocturnal in its habits, wails in the most doleful manner; the Goat-suckers, which for the greater part, generally purr their even song, not much unlike a cat in a happy frame of mind, occasionally give utterance to the most disagreeable tones; and even in the words so clearly spoken by an American species there is expressed something uncomfortable: the call "Whip-poor-Will" is certainly a summons of a dismal kind!

There are, however, among diurnal birds, some whose cries are equally disagreeable, especially in the regions within the tropics. Two species, living in Europe, have acquired a certain celebrity on account of their call. One is the Bittern (*Botaurus stellaris*), whose call very much resembles the bellowing of a bull; this singular sound is produced by burying its beak almost entirely in the water while calling. The other is the celebrated Sinister Jay (*Perisoreus infaustus*), an inhabitant of the far North of our quarter of the globe. According to concurrent statements, the cry of this bird closely resembles the wail of a human being hurrying to destruction, thus sounding, in the highest degree, unearthly. In Africa I have also remarked something very similar in the call of an Ibis (*Ibis Hagedasch*): should this bird be in a calling humour, the listener would imagine he could distinguish the screams of a child in the act of being tortured to death in the most fiendish manner. Sometimes one hears loud shrieks of pain, followed by a low sigh; at others, stifled groans, a wail dying away in the distance, and then, again, the most heart-rending screams. America possesses several inveterate screechers. In the northern portion of that continent the Pinnated Grouse (*Tetrao cupido*) howls, as for a wager, against the wolves of the prairies; in the South the "Toropisju" of the Peruvians, one of the Umbrella-birds (*Cephalopterus ornatus*) brays like a trumpeter, from which it gets its name; the red "Tunqui" will grunt like a porker; the screaming of the "Arara," or Macaw, is perfectly deafening. In addition to these we have now the feathered inhabitants of the virgin forest, which mostly call in loud tones, and are to be looked upon as the real awakeners of life in the woods.

It is a curious fact, that all impetuous and thievish birds have remarkably loud and repulsive voices. Birds of prey, Herons, Ravens, and gallinaceous birds generally, emit shrill disagreeable notes. So that the true character of the bird is unmistakably detected by the sound of its voice. There are, however, exceptions to this rule. According to Le Vaillant a species, the chanting Goshawk (*Melierax musicus*), allied to our Sparrow Hawk (*F. Nisus*), gives utterance to a somewhat singular but melodious little song; the Warrior Eagle (*Spizaëtos bellicosus*), of Central Africa, greets his friends and acquaintances with notes the reverse of harsh or disagreeable.

It does not appear to us merely the result of accident that many singing and screaming birds show great peculiarity in the colouring of the feathers under the throat; and this idea is in no way incompatible with other physiological experiences. Up to the present time sufficient observation has not been brought to bear on the subject, so as to establish it as a law, though we find it confirmed in many of the singing birds known to us.*

No attempt to represent the voice of a bird on any instrument has, as yet, been successful. Certain call- and decoy-notes, perhaps even strophes of a song, can be imitated with some degree of success after much practice. Some authors have endeavoured to reproduce the song of the Nightingale and Philomel Nightingale, by means of words and syllables, but they have entirely failed to make more than a burlesque of it. The following is a specimen of such an attempt to represent the composition of the Thrush, though it is, after all, but a feeble imitation:—

"Quis quis arat?
Quis quis arat?
Vir arat, vir arat.
Ipo! prope, tpo, prope,
Corpusculum in gutture meo,
Corpusculum in gutture meo.
Quomodo hoc ex illo emoliendum est.
Quomodo hoc ex illo emoliendum est?
Consiliis, consiliis, consiliis!
Quo vero consilio?
Quo vero consilio?
Tir - - - ri - - - ll - - - itt."

Only that person will be able to convey even a semi-correct representation to the uninitiated, of a bird's song, who is himself not only an expert in bird's song, but also a composer, and the inventor of some new instrument, upon which he can, with some degree of exactness, reproduce the flute-like tones and other peculiarities of the notes, as well as the different gradations in *crescendo* and *diminuendo*, together with the varied strength of the song in technically correct succession. And, after all, even such an imitation as this would be as much inferior to the original as the best *vox humana* organ-stop falls short of representing the human voice. It is only in the mouth of a singer that the human voice rises to a ringing soul-inspiring song; the bird's heart must compose, and the bird's mouth must sing the bird's song, if it is to be what it is, in very truth,—a living and life-stirring reality.

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* In conjunction with most ornithologists we cannot, in the remotest degree, concur with the theory set forth in this sentence, first originated by Dr. Ludwig Brehm ('Naumannia,' 1855, p. 54); on the contrary, there is more to be said against than in favour of the above idea. Hausmann ('Journal of Ornithology,' 1855, p. 348) lays before us the most conclusive arguments in contradiction of the same, to which Dr. L. Brehm ('Journal of Ornithology,' 1856, p. 250) was only able to reply in defence of his theory by counter-arguments, manifestly weaker than those advanced by his opponent.—*Dr. O. Finsch Bremen.*

CHAPTER IV.

DEVELOPEMENT.

> " Meanwhile the tepid caves, and fens, and shores
> Their brood as numerous hatch, from the egg that soon
> Bursting with kindly rapture forth disclosed
> Their callow young; but feather'd soon and fledged
> They summ'd their pens; and soaring the air sublime,
> With clang despised the ground, under a cloud
> In prospect." . . . . . .
>
> Milton.

Visible in the egg before us, but still not understood, lies the mystery of being. All the creatures of the earth originate from the same source; all living things spring from the same germ—the egg. Thousands take an egg carelessly in the hand, and as many break the same with indifference so as to make use of the contents; these very persons are the last to reflect that when they break an egg they destroy a wonderful structure. A marvellous work indeed!—unequalled in its simple beauty of form, whose contents none can replace: the cradle of incipient being, as well as of newly awakened life, a shelter for the formation, clothing, and nutrition of a future creature—its preparation for the world! Out of no other space can such greatness issue as from the egg; in no other space can such wonders be sheltered, live, and reach maturity, as in this small, insignificant, and, for that reason, but rarely valued structure for distributing and maintaining nature.

We may cheerfully waive the consideration of the various germs from which the living creature is evolved; for the small egg (rendered visible only when magnified a thousand times) of the microscopic Infusoria is quite as wonderful as the egg of the Ostrich, which is almost as large as a man's head; and this, in turn, is not a whit more wonderful than the tiny globule enclosed within the secret sanctuary of the mother, from which springs "man in God's image." The seed of the plant and the egg are one and the same thing, as regards the therein-contained marvel of life, which we see and grasp, though we are not in a position to understand it. As for the rest, all organic germs resemble one another, for they are all more or less similar in form.

The germs which at present occupy our especial attention appear, it is true, to differ much in size, form and colour, but are in the main, however, alike. The size of a bird's egg is generally proportionate to the circumference of the body of the mother, and weighs about one-tenth of her own weight. Lämmergeirs, Eagles and Cuckoos lay very small eggs; those of the Petrels, Auks and Guillemots are very large.* It is only in isolated cases that eggs differ much in shape from the common Hen's egg, and then only in being either more spherical or approaching more the form of a pear. With regard to the colouring there is, on the whole, little to say. The eggs of birds breeding in holes are generally white; those of birds breeding on the ground, earth- or grass-coloured; birds building in trees, spotted; while those of bright-plumaged birds are often shiny white.

It is immaterial at the present moment which bird's egg we should select for cursory examination, with the view of investigating its structure; so we will avail ourselves of the one easiest obtained and best known, that of the domestic fowl. Let us try, first of all, however, to explain clearly its origin.

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* We suppose Dr. Brehm gives these examples as exceptions to the general rule.—*W. J.*

As is well known, the vivification of a germ is caused by the most intimate connexion of the two sexes, this germ having remained for a long time previous in a normal condition. After this vivification has taken place, one of the almost countless little globules contained in the ovary separates itself from among the rest, and gradually grows to the size of the future yolk. In the meantime it has absorbed from the blood all those materials which form the yolk, or has itself become the yolk of the future egg. The yolk having arrived at its full growth, the membrane, in which it is enveloped and by which it has hitherto remained attached to the ovary, breaks away and forms at once the covering of the spherical body, which is composed principally of casein, sulphur, iron, lime, and fatty matter. It now falls into the oviduct, the coats of which exude the white, or albuminous portion of the egg; and winds slowly through the same. At the same time the white secreted (a compound of fat, grape-sugar, common salt, phosphoric acid and earths) next attaches itself closely to the revolving sphere; and thus arise the so-called "chalazæ" between which, at the point of separation of the yolk from the ovary, the germ lies. In the lower portion of the oviduct other deposits are secreted, differing in character from those in the upper portion, which form two leather-like membranes lying closely one over the other, excepting at the blunt end of the egg, where they are separated by an air-cell; over these, again, is deposited the last secretion of the duct, a chalky layer, which forms the outer shell. Thus we find an egg to consist of the following parts :—a firm calcareous shell, perforated with innumerable pores ; two membranes ; the albumen, deposited in three different layers, combined and overlying each other, and connected in two places with the yolk ; the membrane enclosing the yolk ; the germ ; and, lastly, the yolk itself, having a cavity in its centre communicating with the former by a tube or duct.

The apparently insignificant germ-spot is the most important of all the individual portions of the whole ; in it lies the dormant Life, awaiting only the magic warmth destined to arouse it. Scarce larger than a grain of millet, and yet all the remaining component parts of the egg are, so to speak, absorbed in it. All the ingredients which chemistry discovers to us in an egg are employed by this germ in the construction of the body ; there is neither deficiency nor superfluity. Yet in it we cannot find the slightest clue which would lead to an explanation of the riddle of Life. The fresh-laid egg is, to all appearance, dead—though only apparently so—for, in reality, it lives. Each component part leads, as it were, a passive life, holding, however, constant communication with the outer world. If action, consisting of interchange of matter, is intercepted by the application of a coating of wax, oil, or varnish, &c., the faculty of life is lost. An egg is possessed of caloric of its own, and can preserve it against exterior influences. It takes one hour and three-quarters to freeze a living egg at a temperature of 8° R., while one deprived of its vitality only requires one hour and a quarter. By further modification of material the egg shows loss of weight, the absorption of matter being less than the amount given off, thus a Hen's egg, while undergoing the process of incubation, loses about one grain per diem, or three drachms six grains in all.*

How would it fare with creation without light and warmth, those twin sisters, separate and yet blended in one? They send forth their rays all over the whole world, even in the darkest nook, and create, fashion, charm, and vivify without ceasing. All the component parts of the egg, oxygen, hydrogen, nitrogen and carbon, which indeed are, almost without exception, to be obtained from the primary elements of plant and animal life, by analysis, are dead without this divine power, to which we stand indebted,—who can say to what extent! In the quickening of the egg it is not a question of that heaven-born warmth, which we can only think of in connection with light, but that emanating from the breast of the mother, which replaces the sun's rays; and this heat can even be supplied through the agency of a simple machine. A uniform temperature of thirty degrees of Reaumur (equal to that of our blood), kept up for days together, is all that is required to hatch the egg of a bird.

The naturalists of the present day have, with the assistance of the "incubator," been enabled to make a great number of observations, from which they have gathered much valuable information on the subject. I will now give to my readers, in the shortest possible space, the result of their experiments with the egg of the domestic Fowl.

A few hours after the operation of incubation has commenced, that is to say, soon after the egg has become thoroughly warmed through, the first breath of awakened life is to be perceived in the germ spot. In a perfectly fresh egg, with the aid of a powerful microscope, we discover that this germ is a disc composed of two laminæ or layers, one lying over the other, the whole acting as a cover to the orifice of the tube leading to the cavity in the centre of the yolk. These laminæ show themselves to be composite structures, consisting of two cohesive masses of very minute globules. After a short period of incubation one may perceive that these globules have become more numerous, owing to subdivision, and taking the form of cells or bladders, filled with fluid, become one with the floating germ. This is the first evidence of the working of life in an egg.

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* According to Czermak.

Some hours later the cells show an increase in number as well as in size, and the lower layer of the disc of the germ becomes divided into two parts, forming two other laminæ. At the fifteenth or sixteenth hour of incubation a fine streak of irregular thickness arises from the centre of the upper layer of the disc, taking a direction parallel to the shorter axis of the egg: this is the origin of the vertebral column. The germ-disc has, during this time, thickened and expanded, and its two upper laminæ have become blended, taking the same direction as the above-mentioned streak, and therefrom proceed to the so-called proto-vertebræ. In the course of the next six or eight hours the edges along the sides of the streak, becoming raised, approach each other, and, uniting after contact, now form a hollow tube. At the same time there appears on either side of the same small cubes or dice; these form later the vertebræ. The upper ones among these are soon distinguishable by a bladder-like enlargement which proceeds from them: this is transformed into the skull. The separate layers of the germ-disc have become extended, the upper one spreading over the superior surface of the yolk, the middle one exactly underneath, and the lower in the tube leading to the cavity in the yolk's centre. On the edge of the centre leaf a few minute blood-vessels are to be detected by the aid of a powerful microscope, and the tube, forming the duct for the spinal marrow, has become bent. All these structures, resulting from the first day's incubation, bear no resemblance whatever to the bird into which they will become ultimately developed.

On the second day the genesis of creation proceeds with extraordinary rapidity; the spinal tube closes more completely; the embryo vertebræ increase in number; the bladder-like protuberance at the superior extremity of the spinal tube emerges more distinctly, and shows itself to be formed of four small hillocks. The foremost pair of these receive the addition of another protuberance on either side, which appears in the form of a small bladder, and a little later, somewhat further back, two more similar structures appear: these form the germs of the ears and eyes. The formation of the breast and stomach is also commenced, inasmuch as the upper layer of the germ-spot, by its extension, forms a bag, which latter encloses the whole of the yolk. These upper laminæ separate at a short distance from the middle, and thus allow a small sac-like space to arise, from which spring, almost immediately, two tubes. These meet the vascular network, which has been formed in the meantime, and unite with it, thus forming the groundwork of the heart and its two principal entrances. As soon as the blood corpuscules, engendered in the separate cells, enter into these passages, the circulation of the blood is effected, and our little creature now possesses a head and a heart. The continuous structure and developement of the separate parts proceed on all sides alike, with the greatest rapidity; the germ-spot extends itself more and more over the yolk, at the same time becoming more susceptible of developement.

The third day is fraught with no less importance for the young life. The cardiac tube begins slowly to expand and contract; it throws off the blood already collected in it, and takes it up again. At the further extremity of the four hillocks, lying across and in front of them, a tube is formed, which pushes itself outwards from the inside, and subsequently forms the mouth. The blood-vessels increase in number almost visibly. On one of the principal veins of the heart new forms also appear, and their lobes, with numerous ramifications: the deposits for the liver and the portal system of veins, which are so important. Small inturgescences arise above the heart with still smaller knobs; these form the commencements of lungs and windpipe; singular folds among these form the future intestinal canal. The principal advance in the third day's growth, however, is the division of the skin of the germ on either side of the place where it is alive. Their lower portions now become two flakes, which grow together, so as to enclose the breast and stomach; the upper parts, on the contrary, form the first mantle, in which the little bird is enveloped until almost the very hour of its egress from the shell, or the first cradle, in which the little being, already become somewhat substantial, remains sheltered, until fully prepared for its entrance into the exterior world. At the time of its adjustment in this cradle it moves for the first time, turning itself, with the side of its head to the right. Through this the heart takes its proper position.

In the course of the two next days the following may be observed, even by the less initiated. The division caused by the growing together of the two flakes, or laminæ, of the skin of the germ goes on further; the upper laminæ close themselves completely on the fifth day into that envelope, to which I gave the name of cradle. The vertebræ become lengthened in such a manner that the head and tail portions almost touch, through the curved position they occupy; the eyes exceed in development almost all the remaining parts. The processes of the legs and wings, which on the third day of incubation were only visible as slight ridges, and on the fourth as projecting leaves to the plate of the stomach, became on the fifth day rather prominent stumps. At the close of the last-named day what still remains of the egg has become essentially changed in appearance: the albumen, or white, has considerably decreased, and the yolk, on the contrary, increased; the latter has acquired more substance, while the former has become more fluid in its consistency.

Now commences quite a new stage of the existence of our creature. With the sixth day appears a hitherto dispensable, but now highly important organ, which in the meantime does the duty of the lungs, the allantois. This appears already, the second day the egg has become vivified, in the form of a small globule situate at the hinder part of the germinating chick: this increases on the third day but slowly; from the sixth, however, its progress is very rapid. Whereas, in the meantime, the breast and belly have closed up, except where the umbilical opening is connected by a tube with the yolk, there remains no other means of communication open for it: consequently it is connected with the body by one of the tubes which pass through the navel, and is not brought into closer contact with the yolk or nutrition bag. After the sixth day the allantois grows with incredible rapidity until it has reached the inner wall of the egg; here it applies itself, and now brings about the chemical exchanges between the in- and outside. The veins leading from the heart into it branch out into so-called capillary vessels, which do not prevent the giving off of the carbon and absorption of fresh oxygen in the blood circulating through them. All interchange takes place perfectly and easily, notwithstanding the apparent obstacles arising from that peculiar organic action of the membranes, percolation or exudation (endosmosis and exomosis), which, though proven without doubt, still remain but indifferently explained. In this manner the chicken begins to breathe in the egg, and thereby introduces into the body the action of animal heat. Through this it becomes strengthened and is enabled to dispense for some time with warmth from outside: thus it is already in some way independent.

From this time on, till the bird creeps out of the shell, the further course of development is really only the enlargement of those parts of the body which have been planned during the previous days. The protuberance at the fore end of the head (sinciput) divides and lengthens, but can only be recognised as the beak by the tenth day; the legs and wings, which before were exactly alike, stretch and extend themselves, taking, almost at the same time with the beak, their individual formation; the lungs grow uninterruptedly until the last day of incubation, by which time they have arrived at their perfect state. After the fifteenth day the feathers, in the case of the domestic Fowl, begin to sprout from the skin; with other birds, at the corresponding date, some streaks of down at least. By about the twentieth day, in the case of the common Fowl, the organs of the senses have reached their full developement; with other birds, *nearly* so. On this day the Chicken begins to breathe through the mouth, and, in proportion as the lungs increase their action, the allantois dries up. As the end of the period of incubation approaches, the yolk becomes wholly consumed and absorbed into the body. Our young citizen of the world, awakening to full life, now gradually breaks through the shell of the egg with the assistance of his beak, which is furnished with horny excrescence at the tip, expressly intended for this purpose, inhaling lustily deep draughts of the outer air: he stretches and extends himself, works away afresh, and bursts at last the shackling envelope to reach the light of day. At this instant we may say he is born again; for it is only from this date that he really makes his first entrance into life.

Though the egress from the shell is fraught with importance to all birds, nevertheless, its consequence differs considerably in respect to individual species. But few birds arrive at that state of self-dependence, while in the egg, which will allow of their wandering alone and unaided, in the path suited for them, immediately after leaving the shell, under the guidance or tutelage of the parent couple or mother; by far the generality make their *début* into the world in a very helpless condition. For a long time they require from the parents the tenderest devotion and most self-sacrificing care: they still have to go through another stage of developement, previously to finding themselves in a fit condition to range the wide world. It affords particular pleasure to the observer to follow Nature, governed and ruled, in all her wonderful ways; to watch the practical manner in which every single one of her children is prepared for life. I cannot refrain from giving some information on the subject of the further developement of the young bird, in which I shall be chiefly aided by the observations of my father.

Precisely those birds which, on reaching maturity, are endowed with the greatest strength, motion, and self-dependence, are those which show in their youth scarce a trace of these very gifts. The Royal Eagle at its birth, that is to say at the moment when it first sees the light, is the most helpless creature under the sun, sharing, we may observe, a similar fate with the lord of creation! Indeed, it first escapes from the shell covered with a rather close dress of white down; this is soon thoroughly dried by the warmth of the mother's breast: it cannot, however, even stand upright, and must for many a long day cower for shelter, from the storms of the outer world, under the mother's caressing pinions. Flesh, the only nourishment beneficial, in its case would be quite useless for the purpose, if the mother did not raise it from her crop in a half-digested state. It is only after commencing to grow that the young bird and its brothers and sisters require more food than their father can procure; the mother, also, must recommence her raids, and thus leave her children alone in the eyrie. The hatching of the noble brood takes place in the early season of the year: very stormy weather is then prevalent, when the loving queen finds it necessary to leave her hopeful youngsters for the purpose of seeking food. The eyrie is not in the least calculated to render the warmth of the mother's breast dispensable: it is cold and draughty, in comparison with the warmly and carefully-built nests of other birds. Cold, snow, wind and rain,—unwelcome guests,—force their companionship upon the callow brood cowering in the house, a stack of sticks, on yonder crag. Be sure, however, they are not forsaken! Nature, the ever-loving mother of all being, has taken them under her care. Before even the young Eaglets have lost any of their ugly awkward appearance, rendered only the more disagreeable by the prominent crop, their feathers begin to sprout, especially those on the upper side, owing to its being more exposed to the weather. The pinions, or wing-feathers, appear first; next, those on the back; and later, those on either side of the breast. The whole of the upper portion of the body is almost entirely fledged before the young robbers have learnt to sit up, while the under part scarcely shows any sign of feathers. Still our bird is incapable, as yet, of any independence of movement. Days and weeks pass away before it is able even to crawl about the nest; and it is only shortly before leaving it altogether that the Eaglet tries its wings, as it were, by flapping them up and down. Long after leaving the eyrie they require the care of the parent birds. All other birds which arrive, so to speak, at maturity in the open nest, are equally tardy in their developement up to that point.

The contrary takes place in the case of all Gallinaceous birds, as well as Waders and Waterfowl. Every one is acquainted with the history of the first four-and-twenty hours' life of the domestic Fowl. Scarcely has the Chick escaped from the shell, and its downy dress become dried, than it gives evidence of self-confidence and activity, such as would lead one to believe that it had already been hatched a month or more. It nimbly follows the mother about, listens to her call, and acts as though it were fully aware how such a youngster should conduct himself; and, lastly, picking up, without further ceremony, such food as it discovers and recognises as fit for use. The wing-feathers which, with the domestic Fowl, only require a partial developement, begin to grow from the first day, and soon reach a sufficient size to enable the little creature to flap them with nearly the same facility as its mother. In the interim, breast, belly and back become fully fledged, though the first feathers only serve for a short period; for these, the wing-feathers included, are renewed more than once, before the birds have reached their full size; and it is not until autumn that the whole plumage may be said to be complete. While the young bird of prey still squats helplessly in the nest, the brood of Chicks have long since dispensed with the tutelary lessons of the old Hen, and become quite independent. It seems as though Dame Nature—taking pity on the young of most Gallinaceous birds, so early left by their parents to shift for themselves—comes to their assistance, and takes most of their cares upon herself from their very first entrance into the world.

The young of the various Coursers, Plovers and other shore birds become developed with similar rapidity. Like those of the domestic Fowl, they emerge from the shell clothed with parti-coloured down, and, leaving the nest the moment they are hatched, seek their food under the tutelage of the parent birds. They are most effectually hidden from their enemies by the resemblance the colouring of their dress bears to that of the ground; the art of secreting themselves they understand to a nicety, so that, having left the nest, they can fearlessly face the dangers of their future existence.

The young of most aquatic birds are similarly favoured, and some even possess gifts in their youth which are lost on reaching maturity. They run infinitely better than their parents, and dive—an accomplishment which the old birds are incapable of, that is to say, in the case of many species of Ducks and Geese. Others, like the Divers, Mergansers and Goosanders, are able to swim and dive as well as the parent bird the first day of their birth, or at least as soon as their downy coats have become dry. The contrary occurs, however, in some cases, where the veritable rulers of the ocean depths are in their *infancy* anything but active in their own element.

One gift, flight, only reaches perfection with maturity; the single exception to the rule is the family of the Gallinaceæ. No other bird, not even the most favoured in this respect, is able to use its wings for the purposes of locomotion before arriving at its full growth. Truly this condition is attained with comparatively uncommon rapidity. A large Falcon will require about seven weeks for the purpose; an Eagle scarcely four months; a Swan twelve weeks, at the outside; an Ostrich not more than eight months, though, as a rule, old birds are larger than the young.

I have said that young birds of prey, especially those which, when grown up, are the handsomest and possess the noblest bearing, are awkward and ugly in the extreme while in the nest. There are other birds, however, whose young present a still droller, more comical, and sometimes more disagreeable appearance than even these. The young Ostrich resembles a hedgehog much more than a bird, its feathers all partaking of the character of stiff pointed spines, sticking straight out on all sides, like those of that animal. Young Herons are simply hideous to look at, and can scarcely be recognised as the beginning of what they are ultimately to become. Young Kingfishers have a dress which suggests the idea of a yellow skin with a few thick, parti-coloured bristles glued on to it; the young of the Raven are not much handsomer; and newly-hatched Pigeons or Doves have hardly a trace of any covering at all, their shapeless bodies being but sparsely furnished with very thin down; in addition to this they are blind until they have attained the ninth day, and are extremely helpless. The young of most singing birds are also unable to see before nine days are over, and emerge from the shell almost totally naked. How trim and pretty, on the contrary, are all those which have to fight and struggle with the world immediately on their egress from the shell! The young Chicken, no matter of what breed, is certainly a charming little creature! No less pretty are very young Goslings, Ducklings, the young of the Grebes, Divers, Gulls, and others. Nature is, however, ever true and just in all her dealings. The last-named are exactly those which take comparatively a longer time to develope into the full-grown bird than those raw, ungainly creatures which keep the nest so long. Every bird first acquires to perfection that talent which is most useful to it in its own peculiar sphere. Gallinaceous birds are runners, and most aquatic birds swimmers the first day of their lives; the members they most require for purposes of locomotion are perfect from the birth, whereas Flyers and Flying Divers are not able to make good use of their peculiar means of locomotion until they have practised the same in a suitable manner; and this can only take place when they have nearly reached maturity. For the rest, those birds which are apparently the least favoured in the commencement ultimately show the greatest activity and address in the movements most essential to them. It is the same with all nestlings. That bird which emerges from the shell with scarce any covering at all flies sooner than an aquatic bird of the same size: the Woodpecker learns to climb much sooner than to walk.

With one and all developement remains the same, however different its appearance, and each and every mode reaches the required goal by the shortest route. The childhood, so to speak, of the bird is short in comparison with its whole life-time. It vanishes with the first independent flight, when the bird enters upon another phase of its existence.

CHAPTER V.

FROM THE CRADLE TO THE GRAVE.

> " 'Twas wisdom, mercy, goodness, that ordain'd
> Life in such infinite profusion,—Death
> So sure, so prompt, so multiform to those
> That never sinn'd, that know not guilt, that fear
> No wrath to come, and have no heaven to lose."
>
> MONTGOMERY.

A LONG life of work and vicissitude is the lot of a bird, when once it has left the nest, the warm shelter of the mother's breast, and renounced for ever her tender love and care. We will cast a cursory glance at this life, as far at least as concerns the bodily growth and changes to which the creature is subject, without, however, at the present moment touching upon its pleasures and pains, loves, sorrows and battles: these vicissitudes will occupy our attention farther on.

The bird's childhood, as we have already remarked, is very short; its youth, however, is long, though, perhaps, not so in exact proportion to the age it ultimately attains. The actual *growth* is certainly soon completed; and ere many weeks have passed since the bird's first entrance on the world's stage, it is fully prepared to cope with its storms, strivings and requirements, and thoroughly capable of taking care of itself. But to rival the perfection of the parent birds requires a very long time, which is, perhaps, only reached by the few. With the larger birds, especially the Eagle tribe, many years must pass away ere the point is attained, when the young can be said to have reached maturity.

A bird's age is determined with greater ease than that of any other animal, by help of the plumage. Perfect as it may appear in the newly and fully fledged bird, it is still in truth but the dress of childhood or of youth. This dress, however, can never vie with the plumage of the parent bird, though the tints and shades may seem to be identical; still the careful observer will remark that beauty and the true burnished polish only occurs in full perfection with the mature bird. With many birds we have hitherto been unable to determine with any degree of certainty how many years they wear the dress of their youth. The nest or first plumage is soon cast aside, and with some species—for instance, the Golden Oriole—it is abandoned before the young quit the nest; on the contrary, the next dress lasts at least half a year with all birds, and in most cases passes through many intermediate stages ere it attains the full plumage of an old bird, and this again seems to get brighter and more beautiful with each succeeding year. Science distinguishes the different colorations of the plumage with the greatest exactitude in order to determine with certainty the age of well-known birds and to assist in making an approximate estimate of that of those less known to us.

The plumage of many young birds bears no resemblance whatever to that of the mature specimen; others, again, are like that of the adult female, which, as we know, is often coloured and marked quite differently from the aged male; lastly, there are others, though very few in number, whose sex may be determined, even in the nest-dress, inasmuch as the young male resembles the father, and the young female the mother. Long study of the feathered creation is necessary to enable one to determine correctly the age of each individual bird, and even then the very best naturalists are at times subject to be misled and deceived by young birds, describing them as new species: this often occurs when comparing the young of Raptores and aquatic birds with adult specimens, especially among the Terns, Gulls, Gannets and Cormorants. With the latter, as also Vultures, Eagles and many Falcons, the form and proportions, and not the colours, form the basis upon which the uninitiated should seek to distinguish the species; shape and construction are, however, more or less the common property of allied forms, and for this reason cannot always be relied on for the decided determination of a distinct species. The individual feathers of young birds, Vultures especially, are sometimes differently constructed to those of the mature specimen; the decorative insignia are wanting—for instance, tufts of feathers of a quite peculiar construction which grace the old birds, and thus it often happens that scarce a single characteristic is to be found common to both. It is only when a bird has donned his courting suit that he is not easily to be mistaken.

All the changes of plumage to which the bird is subject are brought about by one of the most important recurrent events of the life of a bird, in conjunction with the casting of the feathers and changes of colouring: this action is termed "moulting," and differs very much in the effect which it has upon the entire plumage, and also as to the time within which such changes occur.

The bird is vividly affected by it, sickening and even losing some of its powers for a time, the result being listlessness and low spirits, even to sadness. Its whole being becomes altogether changed, and if a songster it loses its song; at first its appetite decreases, at the next stage it increases at the same ratio, but without giving a proportionate amount of strength: it sleeps little, owing to the unpleasant irritation of the skin produced by the casting of the old and the sprouting of the new feathers: the bird hides, or rather isolates, itself from its companions, and seems, in fact, quite a changed creature. Occasionally one leaves its habitat, either previously to or during the moult, seeking a district where better nourishment can be obtained with the least amount of exertion; or perhaps in order to remain undisturbed during the period of its unavoidable indisposition.

However unpleasant the process of moulting may be to the bird, it is of the greatest importance during its whole existence. The plumage, so worn by constant use, becomes at last utterly inefficient for the purposes for which it was originally intended: each separate feather loses its pristine form, and through the action of the sun, dust, wet and want of adequate nourishment, its colour also: this loss of colour takes place much sooner in the South than in the North. I have shot birds of prey in Africa whose feathers were but the remnants of what they had been; the original colours were not discernible, and the entire appearance of the bird was miserable in the extreme. Thus, under the circumstances, the renewal of the means of movement and decoration become a decided necessity.

It appears as though the feathers, greatly debilitated during the action of incubation, entirely lose all the material necessary to their nourishment by the end of this operation; the supply of this nourishment always having been limited, they are thus rendered totally useless. As soon as the last brood of the season has been reared the shedding of the feathers commences: with some birds this takes place with great rapidity, with others slowly. The fresh feathers are reproduced in like proportion. With birds that fly, moulting is very regular in its action, inasmuch as two corresponding feathers are simultaneously cast, and then reproduced under the same conditions; take, for instance, the third quill-feather on either wing. Birds possessing extraordinary powers of flight, such as Eagles or Vultures, do not shed all the wing-feathers in one season, but only a few, and those generally in pairs, a second couple only dropping when the first feathers have almost arrived at their full growth. Many water-birds, on the contrary, however,—take for example the Geese and Ducks,—are totally incapable of flight during the moulting season, and therefore seek hiding-places wherein to undergo the process of moulting in safety. The wholesale way in which these birds change their plumage makes the time necessary for that operation not more than a month, while in the case of the large birds of prey the moult extends over years before the whole plumage has become renewed. As a rule, birds of flight undergo fewer changes than marsh and water birds, many of which moult twice a year.

Moulting commences earlier with the adult than with the younger birds, that is, those which have not yet left the nest; for these last, if they do not moult actually in the nest, do so soon after leaving it, casting, however, generally, only the smaller feathers, the pinion and tail-feathers being shed at a later period. In cases where the young bird acquires the full plumage of the old one at the first moult, it may be justly regarded as a complete adult bird, and in a condition to propagate its species. With the *Raptores* and aquatic birds, whose developement is not so rapid, we use the term—birds of the first, second, third and fourth year, to distinguish them from the full-grown bird. Other changes take place, which are, more or less, intimately connected with the casting of the plumage; the beak, feet and iris being often subject to great alterations in colour. A muster of our best-known birds will show the great gaps incidental to some families and species during their progress to maturity. The larger Raptores cast their downy covering in the nest, quitting the latter in their youthful dress, of which generally not one feather is cast before the year is over: the smaller species of this family only change the lesser body-feathers at the first moult. It has, as yet, not been determined with certainty what period of time elapses before Eagles and Vultures assume the final adult plumage. Faber knew of an instance in which a Sea Eagle taken from the nest had not, after a period of ten years, donned the white tail, the sign of its having reached maturity. I have seen a specimen of the King of the Vultures (*Gyparchus Papa*), whose adult plumage was only assumed after six years' captivity in Europe, added to which it is very possible that the bird had passed some years in freedom in America. All the nocturnal birds of prey leave the nest in a spotted dress of down, receiving, little by little, the adult plumage, and this, by the first autumn—after which but little change takes place, save that the whole plumage increases in beauty with each succeeding year. The same may be said of most other birds, though, with many of them, a peculiar beautifying of the plumage takes place from other causes. They moult, however, only once a year; and by the time they have reached their first autumn or spring, they resemble the adult birds. Among migratory birds many leave us in autumn in their youthful plumage, moulting, as do their parents, in foreign lands, and returning to us again in their wedding dress. This is, however, not the case with those birds which moult twice a year: to this class belong the Pipits (*Anthus*), the Wagtails (*Motacilla*), Gallinaceous birds, Ducks, Mergansers and others; and, in some degree, also the Herons, the Ruffs, Cormorants, &c. These obtain their most beautiful feathers just before the breeding season, and lose them shortly after; attaining their full colour generally only after two or three seasons. With Gallinaceous birds, moulting, as we have before shown, takes place in a manner peculiar to themselves. The down of the first, or what we may call the down-dress, which is found on the ends of the feathers, is soon worn off; but these feathers, also, do not last long, but are, in a short time, replaced by others. Thus, a continuous changing of the feathers takes place without interruption, from the moment of hatching, until the wedding plumage is assumed. The Capercaillie (*Tetrao Urogallus*) changes its plumage five times, inclusive of the first downy covering, in the space of from four to six months. With others of the same family this change proceeds more rapidly, but takes place in a similar manner.

Most of the Dentirostres, or tooth-billed birds, moult partially, for the first time, in the spring, and the second time completely in the autumn; for it is only during this last change, as is the case with all birds subject to a double moult, that the pinion and quill tail-feathers are renewed. For this reason, the Ptarmigan (*Lagopus*) has the aforesaid feathers (except the middle tail-feathers) always of the same colour, though, in other respects, the two dresses are quite different. The throwing off and the discoloration of the feathers may be, to a certain extent, regarded as the completion of the moult. With many birds the new feathers have at first white or gray edges: these, in the course of the winter, become worn away, and then reveal what they have hitherto hidden, *viz.* the often quite differently-coloured centre of the feathers. At the same time, however, the colours appear brighter, though from what cause we are, as yet, ignorant. This peculiar intensifying of colour has lately been the cause of much word warfare, some naturalists regarding it as the cause of changes in colour of plumage in certain birds only, whilst others hold a contrary opinion. In truth, it would appear as though this action or influence had till now been under-valued. It was thought unreasonable to suppose that a perfect feather could continue to draw nourishment from the body; thus the occurrence of increased action could not be explained. For this reason, alone, it would seem that the argument is based upon wrong premises. If feathers, as it has been assumed, receive no further nourishment after having reached maturity, they surely would never receive a sudden increase of brilliancy in their colouring. It is indisputable that the colouring of a feather depends principally upon the actual construction of its individual parts, it can, therefore, not be supposed that the wearing out of this very conformation should be the sole cause of the future brilliancy of the feather! It is evident that in this case there must be some other agency at work, and, this being so, the only thing we can suggest is, that a better nourishment takes place, and, consequently, a more active chemical interchange of material. That the feathers themselves actually do change colour, and that a bird can pass through the different stages of plumage, from youth to maturity, by the aid of this unexplained agency, is an undoubted fact: I have seen the Redfooted Falcon go through these changes, finally assuming the adult dress, without casting a single feather, except those actually worn out!

In comparison with the moulting, the rubbing away of the feather and the heightened colouring of the plumage play a subordinate part; the former is and must ever remain the principal cause of the visible and yearly renewal of the youthful beauty of the bird. These happy beings do not appear to be subject to the changes of old age. Instead of dying a lingering death, like other creatures, each new change of plumage gives it fresh life and beauty. Moulting is a sickly condition only so far as concerns appearances; in truth, it is only a start on a new life, and in its absence the bird sickens and dies. It is for this reason that the lover of caged birds plucks out a feather or two from the tail or pinions, should moulting not commence at the proper season, and thus seeks to infuse new vitality into his little favourite. Thus we cannot but regard moulting, in every way, as a total regeneration. This is the origin of the wondrous tale of the Phœnix arising with renewed youth from its own ashes; every bird somewhat resembles the fairy form in the legend, for the life of each and all is worthy of the poetry in which the story is enveloped, a poetry which influences our minds when engaged in studying and enquiring into the mysteries of bird-life. How delightful to embrace fresh youth and beauty with each ensuing year to the very end of life! Yet this is the boon which Nature grants to birds on each succeeding year; and when death suddenly strikes its victim it can scarcely be called a terror, as there is no wearisome sickness, and no lingering on in misery and in pain.

The majority of birds attain to a vigorous old age. The Eagle is especially celebrated for this: in the year 1719 one died at Vienna, after a captivity of 104 years, even though it had been denied the greatest earthly blessing—liberty! Similar cases of longevity are related of Parrots. Humboldt writes as follows:—"Thus runs the tradition among the Guareka Indians, that the brave tribe of Aturer, pressed on all sides by the cannibal Carribes, took refuge among the crags and caves of the cataracts; a wild, sad retreat, where the oppressed race, and with them their language, passed away. In the most inaccessible part of the Raudal, rocky caverns are to be found, where it is probable that the last remaining family of the 'Aturers' has but lately died out; for in 'Maypures' there exists an old Parrot, whose language the natives cannot understand. The explanation they give is, that he speaks in the tongue of the 'Aturers.' This bird has been made the subject of a beautiful poem."* The age of other birds may possibly be estimated in similar proportion. The lesser may naturally be supposed not to live as long as the larger. It must, however, always be borne in mind, that all birds arrive at an age, equivalent, at least, to ten times that required to reach maturity. Possibly the little Warblers rarely exceed the age of ten years; but they attain their full growth within the first year of their life. Where I formerly resided we had a Garden

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* 'Ansichten der Natur,' 3 Aufl. § 284.

Warbler which bred for many years running regularly in our garden; it is so easily distinguishable by its song that we cannot mistake it for any other. Olaffen remembers a pair of Eider Ducks using the same nesting-place for twenty consecutive years.* Naumann mentions a Cuckoo, which he recognised from the peculiarity of its note, as frequenting the same locality every spring for thirty-two years. All these observations justify the supposition that birds live to a comparatively old age. Canary birds often live twelve, and even fifteen, years. Some of the larger cage birds, and even the Nightingale, will live still longer in confinement.

The death of most birds is as poetical as their life: they rarely die from sickness, owing to unlimited freedom, air and exercise. Birds are much troubled with intestinal worms and exterior parasites; in their wild state, however, they are almost always healthy. When wounded their wounds heal exceptionably well and rapidly, and, in most cases, without impeding a single movement, though occasionally they must be somewhat restricted. We have often killed birds whose wing-bones had evidently, at some previous time, been shattered by a gun-shot, the broken parts having sometimes reunited side by side instead of in their proper places; the bird, nevertheless, flew with rapidity and strength. Sickness, on the contrary, generally ends fatally. At times even wild birds are seized by it. Numerous corpses of the same species are often found in their common roosting-places: this would lead to the supposition that some epidemic had been raging amongst them. Faber often saw Gannets lying dead in heaps on the coast of Iceland; and Guillemots floating along shore evidently dying. I, myself, in the neighbourhood of Suez, came across a small grove of palm trees, the ground under which was strewed with the corpses of the common Rook (*C. frugelius*), the place looking like a veritable cemetery. Possibly, the principal cause of such diseases among birds, in their wild state, is improper or insufficient nourishment. The feathered inhabitants of the farmyard are also subject to diseases, apparently epidemic in their character. Peteny, the amateur bird-fancier, who died not long since, gives an example of the case in question. On the estate of Cziekata, in Hungary, a violent attack of vomiting and diarrhœa destroyed in the space of four days no less than 80 Pigeons, 12 Geese, 40 Ducks, 18 Turkeys, 3 Guinea-fowl, 270 Hens, 70 Capons; in all 493 victims. Even the caged birds of the place, Quails, Larks, and other pets, did not escape the universal devastation; Hens died in the act of laying, Pigeons were found dead in their nests. The diseases most common among cage birds are as follows:—apoplexy, roup, epilepsy, cramp, paralysis of the limbs, eruptions, hœmorrhage, and blindness.

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* Though this statement is undoubtedly given in good faith, still there is room to suppose the observer may have been mistaken as to the identity of the birds; it is more likely that the site was too favourable a one to have been left unoccupied.—*W. J.*

The first symptoms of illness in a bird are silence and a desire to hide itself from view. Aquatic birds, which spend their whole lives on the water, make for the land as soon as illness attacks them, and ascending the beach with difficulty, lie down and die near the spot where they first saw light. Faber says it is a sure sign of sickness when the Eider Duck, Guillemot and Diver approach the shore, and even when driven back still seek to reach it. The death of a singing bird has been touchingly described by Mrs. Hemans in the following lines:—

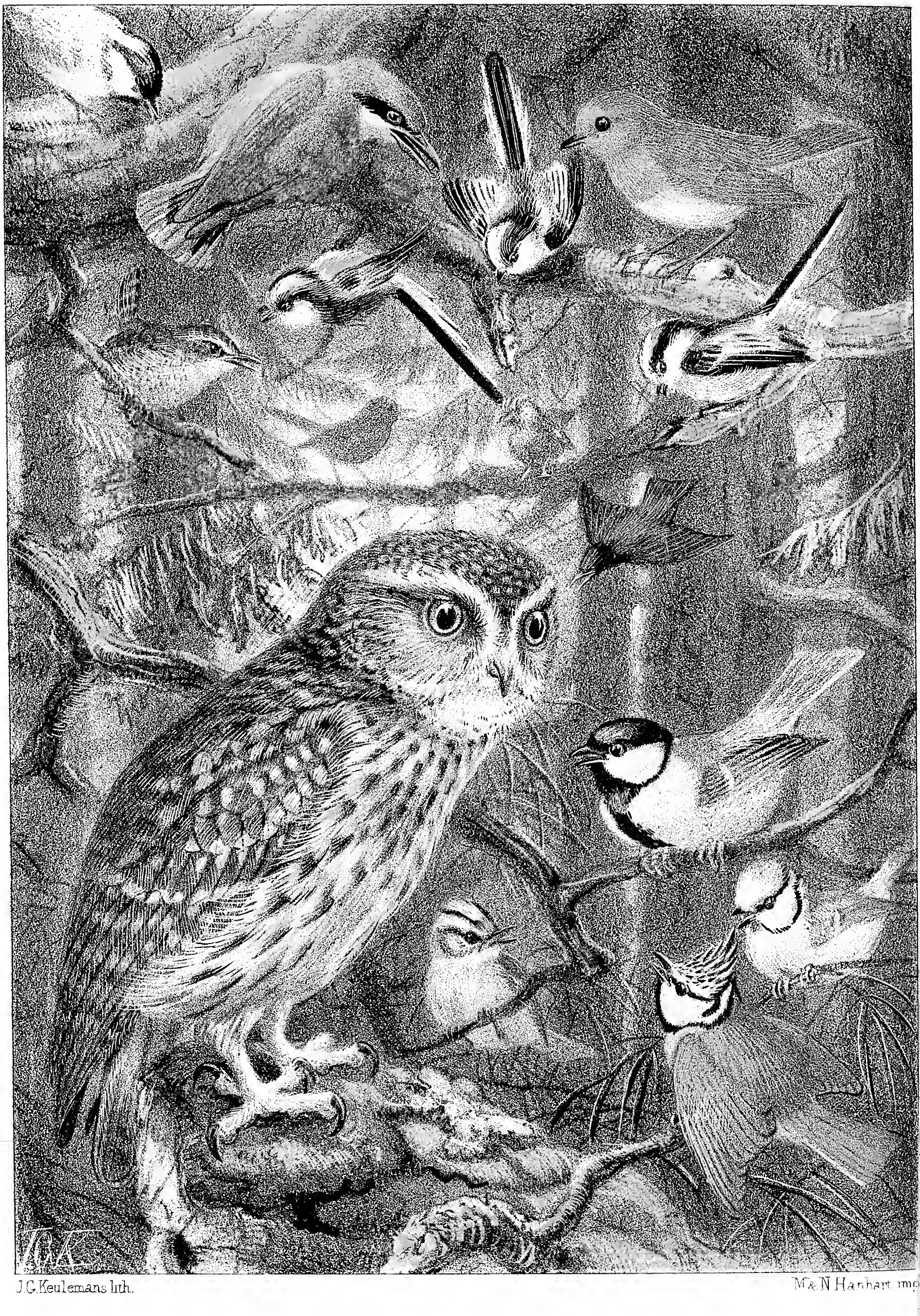
"Mournfully, sing mournfully!
The royal rose is gone:
Melt from the woods, my spirit! melt
In one deep farewell tone!

Not so!—swell forth triumphantly
The full, rich, fervent strain!
Hence with young love and life I go,
In the summer's joyous train.

With sunshine, with sweet odour,
With every precious thing,
Upon the last warm southern breeze
My soul its flight shall wing."

Unfortunately this beautiful poem is as little true to nature as the lovely legend told in the song of the dying Swan. The sick bird has, alas, no song! It is mute, closes its filmy eye, and ruffles its plumage; puts its head under its wing, and departs this life after a few short struggles. I do not know that I can look upon such a demise, happily less frequent among the free tenants of the woods, as so poetical as the forms of death by which they usually suffer. I have often shot a bird whilst singing its blithest, and far from pitying have, on the contrary, envied it such a departure. To die suddenly amid a full outburst of song, without any warning from whence the stroke comes, is a death that a poet might envy. Even the short struggle in the claws of the Eagle or Hawk—no uncommon death for a bird—appears more desirable than the gradual sinking and withering away, day by day and hour by hour, under the shadow of disease.

The bird, however, which dies thus, is better off than man who expires on the field of battle. Its death is at the same time its burial: for this reason the bodies of large birds are rarely found, and those of small ones scarcely ever. Even those which die from sickness rapidly disappear from their last resting-place; a whole army of grave-diggers take the little corpse under their care, hundreds of different beetles and other insects devour it; the grass soon covers its remains, mosses enclose the bleached skeleton; the feathers are scattered by the winds, the flesh has vanished, the bones are buried, and the leaves of the trees alone rustle and murmur long after the lovely being—which lived, loved, and died under their gloomy shade—has vanished from their midst.



J.G.Keulemans lith.

M.&N. Hanhart imp

BIRDS MOBBING AN OWL

PART II.

SPIRITUAL LIFE.

PART II.—SPIRITUAL LIFE.

CHAPTER I.

CHARACTER.

> "Greift nur hinein, ...
> . . . . . . nicht Vielen ist's bekannt,
> Und wo ihr's packt, da ist's interessant."
>
> *Faust.*

It will always be a bold undertaking to pass judgment on the intellectual capabilities of a creature which is, to a certain extent, unknown to us, and with whose nature and habits we are but partially acquainted. Animals still remain strangers to us naturalists, however much we may seek to arrive at an intimate knowledge of their life-history; and, if we would act faithfully towards them, each effort that we make to determine and to describe their intellectual life must avowedly be acknowledged to be a bold one. Nevertheless we consider ourselves, in some degree, competent to undertake the task, on the plea of our large and unprejudiced experience of, and intercourse with, the animal creation. We trust the friendly reader will criticise or excuse the following, in accordance with the foregoing remarks.

The intellectual being of the bird, which we intend to be understood by the word "character," occupies a vastly extended field. Man himself, known as the most capricious and wayward of all creatures, can scarce show us a greater diversity in the workings of his spirit. Taken strictly, no single trait of character is common to all birds; there are the light-hearted; the gay, the sad, the sociable, the unsociable, the trustful, the shy; those open in their actions, and those who would hide them; honest and thievish, generous and mean, the straightforward and the crafty, the gentle and the violent, peaceable and quarrelsome, and, in short, amiable and unamiable characters. The general foundation of the intellectual being among these happy creatures is cheerfulness and gladness. Their whole life and existence demands and shows this; the ease with which the body moves likewise imparts intelligent activity and freshness; mobility of the body and sadness of spirit cannot be looked upon as compatible; the light airy bird knows no care, no restraint, possesses all it requires, and can turn whither it will. Every day possibly has its special vexation, though each coming morning does not bring with it a load of care. The natural results of a life passed amid fresh air and light must be brightness and cheerfulness; indeed, any other idea in connexion with the bird appears to us almost impossible. Nevertheless, there are some whose appearance betokens sadness rather than gladness, moroseness than cheerfulness, but these are few. Nocturnal birds, of all others, belong to this class, from whom glad light as well as spirit seem banished; added to which it is curious that night birds are more sulky and morose in proportion as the creatures on which they prey stand higher or lower in the scale of nature. The beetle-eating Night Hawk or Goatsucker is a much more cheerful individual than the Barn Owl, and the Athenian Owl is a much merrier companion than the Eagle Owl (*Strix bubo*); the latter is embodied gloom; he seems to possess no friends, is discontented ever, ill-humoured and sullen, and apparently always at variance with himself and the world at large; his character is like his form—nocturnal, in the gloomiest sense of the word. Other night birds are more melancholy still, as the Tawny Owl (*Syrnium Aluco*), the Scissor-billed Tern, and the Night Heron (*Ardea nycticorax*). All their movements are slow and measured, their voices either loudly plaintive or a hoarse screeching; their spirits seem to stir as heavily as their bodies.

There are, however, some diurnal birds which are stupid and sad in their character; almost all carrion-, lizard- and fish-eating birds are silent, serious and still. This demeanour on the part of the first-mentioned, sextons by profession, does not seem out of place; but why the generality of snake-eating Eagles and fishing birds should assume the doleful it is difficult to say. Possibly the first do so through their continued intercourse with the ugliest creations of the earth, having become somewhat tinged with their hideous natures; the others, like anglers, go to prove that fishing is indeed a stupid employment. The birds we have mentioned would appear, however, to be almost the only ones not blessed with happy dispositions. All others, on the contrary, seem scarcely able to express the intense happiness of their existence; the inquisitive Starling continually seeking new movements and new sounds, as though he would thereby show the world his joyous frame of mind.

Usually, though not always, birds of a bright disposition are sociable, while, on the contrary, the serious and melancholy seek solitude. Most birds like to associate with others of their own species, either in flocks or in families. Solitary birds, that is to say those that live in pairs and are of an unsociable disposition, are not common. In our country the following shun the society of their fellows from a feeling of jealousy :—Hawks (some), Falcons, Owls, Woodpeckers, Kingfishers, the Dipper, the Wren, the Nightingale, the Hedge Sparrow, the Wryneck, Water Rails, Divers, and most Warblers; these will not tolerate a second pair on their beat, and drive away even their own young, as soon as they are grown up. Others of our home birds—as the Magpie, the Jay, Partridge, Longtailed Tit, Marsh Tit, Stonechat, Crossbill, and Eared Grebe—live in families so attached, that it is rarely one meets with a solitary specimen. In Africa I have always seen the following in flocks ;—Colies (*Colius*), Plantain-eaters (*Corythaix*), and the Promerops (*Irrisor*). The generality of other birds congregate in large bands, especially when migrating. Many assemble together for the purpose of singing :—as Starlings, Swallows, sociable Finches, Weaver-birds, &c.; is it not pleasanter and easier to rejoice in company than alone? It is true that at times jealousy puts in an unwelcome appearance, though it does not break up the general harmony. It is worthy of remark, that the strong rather than the weak associate together, and that even when unconstrained by the pressure of hunger; yet the weak associate with the strong for greater safety :—Jackdaws and Starlings associate with the Rook; Nuthatches, Tomtits, Tree-creepers, and Goldcrests keep company with the Pied Woodpecker; the smaller Waders place themselves under the care of their more powerful kinsmen; Bean Geese, Brent Geese, and many Ducks under the leadership of the Wild Swan (*Cygnus musicus*); Plovers choose the Curlew Sandpiper for their companion. These leaders enjoy the greatest respect, and may be felicitated on the unconditional obedience of their followers. A feeling of weakness links birds also with mammals and human beings:—a hunted Redstart will seek safety among a herd of cows; Pigeons and Sparrows will take refuge through the windows of human habitations, as though they knew that there they would receive shelter; even a Partridge, chased by a Hawk, has been known to throw itself at the feet of a ploughman to escape its deadly enemy.

Did man but encourage the birds which seek his society, there is no doubt his company would be more diligently sought after. By nature these light-hearted creatures are not distrustful, though they may become so when their confidence is abused; they are generally on familiar terms with other animals, and approach them without fear, and man also; but, unfortunately, on nearer acquaintance with the latter they must often learn, to their cost, that danger lurks with too great intimacy; and this makes them as shy as they were formerly fearless. In uninhabited regions, like the Steppes or primæval forest, and on desert islands, &c., the birds which inhabit them look upon the appearance of man certainly with astonishment, though not with fear. The Auks, Penguins, and Eider Ducks, which have their abode by thousands on the icebergs of the Polar seas, allowed themselves to be caught by the hand by those sailors who first landed on their domain. The Larks of the Desert used to run fearlessly into my tent. The same may be observed in all places, where birds are conscious that shelter will be afforded them. On the other side we see just as plainly how easily their trustful natures may become changed through rude experience. The Bohemian Waxwings, which in hard winters sometimes appear among us, show from their behaviour that in their northern home they either never come in contact with man, or if they do they are treated with kindness; and when they leave us it is with a far different opinion of the "lords of creation." Some birds appear distrustful and shy by nature: thus all long-legged birds are cautious; they avoid contact with man even in uninhabited localities, unless, like the common Stork, they have been bred in his neighbourhood, I may say under his very eye, and are conscious of his friendly feeling toward them. The European Black Stork, however, will have nothing whatever to do with man, however much his white cousin may descant on the great advantages to be derived from the intimacy. The Marabou Stork, or "Adjutant" of the East, parades the streets of all Indian towns, while the closely allied African form is never to be seen in one. The Jabiru (*Mycteria*) is ever shy, even in the primæval forest; all large Herons are likewise distrustful of man's presence. Parrots, Lämmergeirs, Eagles, and Falcons rarely allow us to approach them with impunity; Pigeons and Partridges generally prefer positive safety to any uncertainty on that score, and thus take themselves off by times when man appears on the scene; also most birds of solitary habits generally keep out of his way.

Gregarious birds are usually peacefully disposed, while those which do not associate in large numbers are impatient and quarrelsome; some, like Crows, Water Wagtails, Swallows, and Terns, are fond of teasing one another, and strangers into the bargain. Others, take for example the Greater Tit (*Parus major*), are ever ready to quarrel and fight with all that come in their way, both big and little; and for this very reason this bird goes by the name of "Guerrero" (Warrior) in Spain. All birds living in a state of polygamy, are over-bearing and quarrelsome in the highest degree; they fight to the death, not only with their rivals in the tender passion, but also for the sake of getting the upper hand, in general; and they show the most extraordinary courage and perseverance in these contests. Lenz gives us an example of this in the domestic Fowl:—"In the month of May, 1839, I happened to have a hen Turkey, which had just hatched-off a brood of twenty chicks, and, as soon as they were fit, placed mother and youngsters in the farmyard. Scarcely were they installed in their new abode when a young Cockerel, barely a year old, dashed at the Turkey, and a terrific battle ensued. As long as the two birds confined themselves to flying at one another, matters were pretty equal; when, however, it came to pecking, the tide of war turned decidedly in favour of the Turkey, who from its superior height, had the advantage of being able to strike directly downwards. At last it punished the Cock's head so severely that he could scarcely stir. I took him away, trusting he would have the good sense to leave the Turkey alone in future, and, placing him in a quiet corner, told one of my people to keep an eye on the bird; I then left. On returning, about two hours later, the person I had left in charge told me that he had at first forgotten the birds, and found them later in the yard together. It appeared that the Cockerel, leaving his corner, had again entered the yard and resumed the engagement, for he was found bleeding, and to all appearances dead, the Turkey, with bloody beak, giving him an occasional extra peck. 'I have laid him in the stable,' said my informant. Feeling excessively annoyed, as the Cockerel was an especial favourite of mine, I went to the stable, and, to my great delight, I found my poor bird still alive. Allowing him two days to recover, I again turned him down in the yard, feeling convinced that this time he would follow the old adage, 'Discretion, &c.,' and keep out of the way of the Turkey. You think so? No; without a moment's hesitation the Cockerel rushes recklessly at his old enemy, fighting with the energy of despair; and, finally, with some assistance, and by my drawing its attention once or twice to myself, he succeeded in putting the Turkey to flight. This ended the struggle; and his adversary never afterwards questioned his right to the title of 'Cock of the walk.'"

Our old friend the Game Cock is by no means the only bully among birds; almost all are excessively jealous, and will fight among themselves with the greatest contempt for death. In the breeding-season the most harmless birds show an extraordinary amount of courage; tiny songsters fly alike at man and beast; birds of prey do the same, and indeed some of the larger species are at times very dangerous. Some birds are remarkable for their bold fearlessness. Near the place where I was born, a male Capercaillie, which is known to be one of the shyest of birds, used repeatedly to attack passers-by on their way to market, and no amount of chastisement seemed to cool his courage. He was several times caught and brought to the forester, till at last he fell into the hands of some unscrupulous person and vanished. Capercaillies have even been known to attack horses. A Marabou Stork which I had in my yard at Chartum put my tame lion (!) to flight with repeated strokes of its bill, having been frightened by a feigned attack on the part of the latter; the Crane of Von Seyffertitz, of which I have more to say further on, used to guide and drive a herd of cattle, enforcing order with its bill. Ostriches, Bustards, Swans, Turkey Cocks, and Ganders, from their battles with other Fowls, secure for themselves the most unconditional obedience in the yard; the larger species among a family obtain the command over the lesser, and it is curious with what humility and resignation these latter accept their yoke. There is a South-American bird which is called the King of the Vultures, simply because he lords it over all others of his tribe.

"I found," says Richard Schomburgk, "the striking fact confirmed, that the deepest respect was paid to the King of the Vultures (*Gyparchus Papa*) from the species *Cathartes Aura* and *C. Iota*; even if hundreds of these are assembled round a carcase, they immediately retire at his approach. Perched on the neighbouring trees, or, in lieu of these, sitting on the ground, they wait, greedy and envious, until their feudal lord has satisfied his hunger and has withdrawn from the repast. Scarcely has this taken place than they again rush with savage eagerness on the carcase they had lately quitted, to satiate themselves with the remnants of the feast." Humboldt relates as an eye-witness: "I can state as fact that the appearance of a King Vulture will put to flight a whole company of his more plebeian relatives: it is never a question of resistance." I proved to my satisfaction, after several observations, that the same condition of things exists in Africa between the Eared Vulture (*Otogyps auricularis*) and the smaller Egyptian Vultures (*Neophron percnopterus*), and often the same thing occurs among caged birds, when a quarrelsome individual may gratify his love of bullying to its full extent. Their greediness may be considered as the primary cause of this love of power; for greed may often be observed among birds as well as elsewhere. The domestic Pigeon, while eating, seeks to hide its food from others by surrounding it with its wings; Vultures drive one another from the carcase by blows with their wings; Sparrows squabble in the air over a passing beetle: Mergansers will chase a companion both above and under water for the sake of the fish it has just captured; should one Sea-gull dash down to the water all the others in the neighbourhood put in an appearance, in hopes that their friend has discovered something good to eat. Birds so selfish and greedy in their disposition are quite put to shame by our friend the domestic Cock, who, possessed of a spirit of gallantry worthy of imitation, calls his various wives around him to partake of any tit-bit he may have discovered. We may also cite the Bee-eater (*Merops*), as being unusually peaceable, amiable, and unenvious. These charming little creatures will sit in pairs on some low projecting branch, calling to one another until some passing insect attracts their attention, when if one gives chase, the other leaves its more fortunate partner to enjoy the fruits of its exertions. The Drongo Shrikes (*Dicrurus* and *Edolius*) behave in a similar manner to one another, as do the Wood Swallows (*Artamus*). Swallows, indeed, scarce know what greediness is.

There are many birds which one would hardly expect to be good-natured, but which nevertheless are so. We often see the same forbearance practised among them as the lion showed towards the dog confined in the same cage with it. My brother and I kept two Lämmergeirs in confinement, which allowed a Jackdaw in the same cage with them to take the most extraordinary liberties: the impertinent rascal would, without the slightest ceremony, drive his imposing companions from the drinking-trough when they would fain quench their thirst, and fearlessly help himself from pieces of meat literally within their claws. A specimen of Bonelli's Eagle (*Aquila Bonellii*), which we introduced into the cage, was immediately killed by them on attempting the same thing. On the Blue Nile I once saw, to my intense astonishment, a Black-headed Plover (*Pluvianus ægyptius*) quietly making his dinner from a fish in the claws of a Sea Eagle (*Haliaëtus vocifer*), without that individual taking the slightest notice of his small, impudent, but agile guest, who he might have destroyed with a single blow of his beak. The largest African Vulture (*Otogyps auricularis*), many true Falcons, Little Owls, Swallows, Goatsuckers, Woodpeckers, and Long-tailed Tits, most of the Warblers, the Yellow Wagtail, Pigeons, Ducks, Petrels, and Penguins, are all good-natured birds; while, on the contrary, the Griffon Vulture (*V. fulvus*), Bonelli's Eagle (*A. Bonellii*), Goshawks and Sparrow-hawks, Harriers, Owls, Shrikes, Ostriches, Bustards, Partridges, Herons, Swans, Geese, Cormorants, Darters, and Pelicans, are savage and impetuous. I have often kept specimens of *V. fulvus* in confinement, but have never succeeded in making friends with them, owing to the spiteful manner in which they would fly at the face of anybody who approached them, making violent attempts to get at them. Goshawks are like tigers, destroying more birds than they require for their sustenance, not even respecting family connexions. Shrikes will devour their own relations, if they can get the upper hand.

Some birds appear to be specially blood-thirsty, even more so than usual when in confinement. A Goshawk will not only destroy a Falcon nearly its equal in strength, but also Kites and Buzzards; besides which, it will kill and devour relations of all grades: the wife the husband, the daughter the father, the mother the son, or the reverse. I have known a Buzzard devour two Barn Owls, which it dragged through the bars of the cage, although it had already had enough to eat; my tame Parrots would kill other cage birds, even their own species; Tomtits would peck out the brains of little birds, if they could only get at them. The most savage of all birds is the Harpy Eagle (*Harpyia destructor*), as its name implies; its character, its form, and the expression of its countenance are so exceptionably ferocious in appearance, that a human being involuntarily shudders at this bird's glance. "The inconsiderate visitors at the London Zoological Gardens," says Pöppig, in his 'Natural History of the Animal Kingdom,' "appeared frightened at the glance of a full-grown Brazilian Harpy, and quite omitted the petty bullying with which they had treated the tiger: sitting upright and motionless as a pillar hewn from the solid rock, it scares the most daring by a single glance of that brilliant eye, rigid, menacing, and expressive of silent rage; it appeared incapable of fear, and to look upon everything and everybody around with sovereign contempt. A fearful spectacle, however, presented itself to the looker-on when this motionless aspect, disturbed by the appearance of the animal intended for its consumption, suddenly changed to the most violent movement: with irresistible fury the bird rushed on its prey; the final struggle, however, never lasted longer than a few seconds; the first blow of its talons, directed at the back of the head, instantly paralysed, and a second blow—tearing the flanks and thus reaching the heart—generally caused instantaneous death even to the largest cats. The beak was never used at these executions, and the rapidity and certainty of them, as well as the conviction that man himself could not withstand such an attack, was productive of the greatest horror among the bystanders. This bird is very much feared by the natives of Brazil, who avoid any contest with it, and never hazard an attack, considering it too powerful for a single individual." Though this representation is decidedly exaggerated, it is, nevertheless, perfectly true that the Harpy is an excessively savage creature. One of these birds, kept in captivity at Rio de Janeiro, was observed to destroy any mammal which incautiously approached too near its cage; it killed another Harpy, and menaced people as well.

Less terrible than the above, but still, comparatively, just as violent and bold, is the celebrated Tyrant Flycatcher (*Tyrannus intrepidus*): it inhabits Northern America, and attacks the largest Eagles without hesitation, following them with untiring pertinacity and angry screams; it is at length left in possession of the field. The same thing occurs with its representative in the old world, the Drongo Shrikes of Southern Asia and Africa; these also drive away any bird of prey which may approach their nest or roosting-place; possibly this conduct is the result of the desire which small birds possess, in a remarkable degree, to tease and annoy all predatory animals. Eagles, Buzzards, Kites, and others of the less active birds of prey, are mobbed with loud cries by Water Wagtails and Swallows, while the more active (with the exception of the larger Falcons, who don't seem to understand the joke) are treated in the same manner by Crows, Jackdaws, and some even of the lesser Falcons, who boldly attack them on all sides.

Nocturnal birds of prey are, however, the most unfortunate; when discovered in broad daylight by other birds they suffer severely at the hands of the noisy rabble. It is a perfect comedy to see the eagerness with which the little friends of day, worry and strike at the canting humbug, till the latter, worn out of patience, snaps and hisses at them; big and little take part in the fray, and, at last, nothing remains for their nocturnal enemy but flight. It is very remarkable that the birds which are most subject to this treatment are those which carry on their depredations in a secret and spiteful manner, while those which feed on carrion, lizards, and fish, are left in peace; this system of mobbing thus seems to bear the impress of revengeful retaliation. This is, probably, the principal reason why the Cuckoo is so often chased by small birds: I doubt much if this insidious individual is mistaken by any of its tormentors for the Sparrow-hawk, for I have always observed that all birds recognize their enemies. The Cuckoo may consider pity as the motive which animates those birds that rear and bring it up until able to take care of itself; when, however, no longer an object of compassion, these little Warblers, menaced by the egg-destroyer, can no longer have any good feeling towards him; on the contrary, they have a perfect right to detest him.

It matters little whether Cuckoo or Sparrow-hawk be confounded one with the other, no injustice being done to either party—they are both thorough-paced sneaking rascals, speaking portraits of an arrant sharper. The first destroys as many broods in the year as its female lays eggs, while the daily employment of the latter is to kill little birds in the most wholesale manner; its chase is no sample of skilful hawking, but rather low, cowardly murder: he hides, like a footpad, behind bush and hedge, suddenly dashing out upon some small bird flying by, and, alas! unconscious of its danger; these are generally its prey. He lives in ambush, and his ways are knavish: his nest is placed in a low, thick-topped tree, and bushes and shrubs are his favourite haunts; he prefers the advantage of a sudden and hidden attack to honourable open warfare. Other birds of prey which are possessed of short wings and long tails like him,—even Bonelli's Eagle and the Harpy,—are equally sneaking in their habits.

The true Falcons are just the contrary in their character: in Germany they are called "noble Falcons," and well they merit the title, for they are noble and thorough-bred, in every sense of the words: gallant, honourable warfare is their delight: they inhabit high places, and live among the clouds,—on the topmost branches of trees, rocky peaks, the towers and steeples of populous cities,—all these places they select for their points of observation. I have seen them on St. Stephen's Tower in Vienna and on the Pyramid of Cheops; on the crags and pinnacles of both North and South; on the withered tops of ancient fir trees, and high up on the summit of the giant Adansonia of Central Africa. They never hide, but show themselves openly; confident in their strength, and conscious of their speed of wing, they proclaim open feud with all other birds. Full of contempt they look down upon the common herd of thieves below them, and all noisy and importunate intruders they treat without ceremony to a blow of their talons. Falcons devour only what they kill themselves; booty without battle seems to them but a sorry gift. Every glance and motion betokens the nobility of their nature.

Few other birds care, like the above, to show themselves openly. All those aware of their own weakness seek to hide themselves from the observation of the enemy. Some few are ever striving to secrete themselves, so timorous are they, and others are never to be found far from their place of refuge. Bad flyers, as, for example, the Rails and Crakes, are only to be seen occasionally; and those species whose plumage resembles the colour of the ground we may soon recognize as timid creatures, which are always endeavouring to hide from the rest of the world. Large birds also conceal themselves when exposed to attack from those stronger than they are. The blustering Turkey Cock, when it really comes to fighting, shows himself to be only a miserable swaggerer; in his native forests his hectoring ways immediately vanish at the appearance of a bird of prey, when he instantly descends from the highest branches into the low scrub. I have, to my great amusement, discovered him to be an arrant coward, who, in his terror, magnifies every danger ten times over. The Golden Eagle (*Aquila fulva*) and Bonelli's Eagle commit great ravages among the poultry of the few country people inhabiting the sierras and barren plains of Spain: in those regions the Fowls have learnt to hold themselves in constant readiness for timely and precipitate flight as soon as they catch sight of these robbers. One day all of a sudden I saw a whole tribe of Turkeys rush, with great clamour, into one of the peasants' houses, followed by the Cocks and Hens in a state of unmitigated terror. I snatched up my gun to try and shoot the creature causing this commotion, naturally expecting to see an Eagle in the air. In vain I sought for the king of birds: an innocent little Kestrel was the individual who had put the whole tribe in such a state of perplexity!

Among the Eagles, Falcons, and other dominant species, these signs of fear are never seen. They like to show themselves, and on this account generally choose elevated positions on which to take their stand, these being at the same time well adapted for points of observation. Some of their subjects share the same taste; Jackdaws and Starlings delight in the highest pinnacles of towers, where they may rest, chatter, or sing; the Song Thrush chooses the topmost branches of a tree, whenever it wishes to pour forth its charming melody for our benefit; the Yellow-hammer, many Finches, the Warblers of Southern Europe, and others, do the same, for birds, like men, often forget their safety while under the influence of poetry! Song drives the Lark from its hiding-place in stubble or grass, to the bright blue heavens above; and a love ditty will induce the shy Ring Dove to abandon the shelter of the bushy whitethorn.

The conduct of other birds, again, would lead us to imagine that vanity was the motive which led them to show themselves more freely than circumstances should warrant. That birds are vain is amply proved by those species which are arrayed in the most gorgeous colours. One need only observe the Peacock, while paying his addresses to his wife, to see that it is not without reason that he is looked upon as the emblem of that attribute which is so highly developed in the fair sex: with speaking glances, full of self-complacency, he spreads his splendid plumage, and, with innate consciousness, advances towards his spouse, as though to prove to her that his personal appearance is irresistible. All other birds of fine plumage are just as vain as he. Modesty, as in accordance with our views, is with them quite out of the question; they, one and all, rather seek to exhibit the charms Nature has so bountifully bestowed upon them to the best advantage. We may, however, willingly pardon this weakness, as it is conducive to a great virtue—cleanliness. Birds are remarkable for this quality far beyond most other animals, especially mammals. The cat surpasses few birds in cleanliness; even those who devour the most disgusting carrion with gusto, and stink horribly after their meal is ended, seek to free themselves from any portion of the same that may still remain hanging about their bodies. The Griffon (*V. fulvus*) wallows so deep among the intestines of a carcase that its head and neck entirely vanish among the cavities of the body, and are withdrawn smothered in gore and filth; after a short time, however, every trace of the obscene feast has been cleaned off, and also from the rest of the plumage. I only know one uncleanly bird, and that is the Marabou Stork, who withdraws from the banquet with his legs entirely incrusted with the traces of the same; but manages, however, not to soil the under tail feathers, possibly destined to decorate some fair court beauty; the remaining portions of its body are also kept unsoiled. The German expression, "Schmutzfink" (dirty fellow!), is a standing insult to the whole bird-world, inasmuch as it is a cruel untruth. There is not a single bird known which delights in wallowing in filth as do the thick-skinned mammals, and some breeds of cattle; better by far take the latter as prototypes of some people, and not our elegant cleanly feathered pets! So long as they are in good health, slovenliness is a thing unheard of among them; not only each feather, but its every ray being always kept in perfect order. Cleanliness and order are innate portions of a bird's nature. Young birds of prey always void their excrement clear of the nest, from the very first day they are hatched; and other birds try at least to do the same, by turning themselves towards the edge of the nest. It is true that the contrary takes place with the young of birds breeding in holes of trees or rocks; but they are not to blame, as it is simply impossible for them to keep themselves clean; the helpless young are unable to throw their excreta out of the hole, and the parent-birds are not capable, as some other species are, to do it for them, owing to the conformation of their beaks.

The sense of order is a marked virtue among birds, and shows itself most prominently in their division of time. During the breeding-season the male and female relieve one another at fixed periods; and similar regularity is shown in singing, sleeping, and working.

CHAPTER II.

REASON.

> "They also know,
> And reason not contemptibly."
>
> MILTON.

We are usually accustomed to attribute every action assimilating to reasoning capacity, no matter of what description, which may present itself to our notice among "irrational beings," as the workings of instinct. Many deny the existence of reason altogether; others acknowledge it, but at the same time assign to it limits; all are agreed, however, on one point—*i. e.* that the instinct of an animal is quite as remarkable in its way as reason in a human being.

Our pride has raised up so impassable a barrier between the "Lord of the Creation" and "the brute beast" that all the courage Science can muster is requisite for her to attempt to overcome these prejudices. He, however, who attempts the feat, and who keenly inquires into the subject, will find that the intellectual capacities of animals are not so inferior to those of man as that individual's vanity would lead him to suppose. Unanswerable proofs of a highly developed intelligence, and a deep sense of feeling existing among animals cannot be denied, however much one may seek to place these intellectual faculties to the credit, if we may so term it, of instinct.

What do you call instinct? What do you understand by that word? Is it, as we believe, the inward working of an exterior power, such as we understand under the term "Providence," an order emanating from the same—a revelation? Does the brute act under the influence of such a power, without being able to render to itself an account of its own actions, without being conscious of the same?*

In the meanwhile, we may say that there is truly much which is problematical, or which remains unexplained; thus, for example, it cannot be denied that birds are much more weather-wise than we are, and that they are unquestionably good barometers. My father relates several instances in confirmation of this, which had come under his personal observation:—"In the spring of 1816 an unusual number of Kingfishers established themselves along the high banks of the small brooks and streams of Thuringia; in the course of the summer the rivers Elster, Saale, and Unstrut rose so high, by reason of the heavy rains, that all the nesting-places on their banks were submerged." Pätzler relates a somewhat similar anecdote:—"In the spring of 1852 all the Reed Warblers' nests I found were built higher from the ground than usual, while old nests of the previous year, which I had found in the same osier bed on the banks of the Elbe, were placed at the usual elevation; in the early days of June the river overflowed its banks, and the water in the osier beds rose so high, that all nests not built above the usual distance from the ground were under water. The foresight displayed by these little Warblers struck me as the more singular, for the reason, that during the breeding-season, and, indeed, during the whole summer of the preceding year, the water was so unusually low as to allow of those birds breeding in the osier-beds whose custom is to build their nests close to the ground, and whose young were that year reared in safety." In the spring of 1842 all the marsh and aquatic birds deserted a large swamp in the neighbourhood of Ahlsdorf. In the months of March and April there was a great deal of water in the fen, yet no waders, Ruffs and Reeves, Spotted Crakes, Moorhens, Coots, or Black Terns remained to breed; the birds either knew, or at least guessed, that the marsh would dry up before they could rear their young; and, so it came to pass, in the month of October, that my father put up a fox and a brace of hares in the place where generally thousands of Ducks were to be found. Naumann states that he saw a pair of Grey-lag Geese (*Anser cinereus*) which, with their young, abandoned a large breeding-pond, full of water, and moved to a smaller one; the former dried up, while the latter remained well supplied with that element. In March, 1843, the Peewit (*Vanellus cristatus*) forsook the marshy meadows and borders of the low-lying ponds in our neighbourhood, and retired to the plateaus among the hills; it was well they did so, for in the month of May, their breeding season, the low lands were under water, owing to the extraordinary heavy rainfall, whereas the higher levels were just moist enough to render them appropriate breeding-places for these birds. The spring of 1865 made its appearance very suddenly, the winter holding on with exceptional severity up to almost the last moment; the interim between icy coldness and warm spring weather scarcely lasted a fortnight. I foretold the change, though neither the thermometer nor the barometer gave me reason to expect it, but the aquatic birds of the Hamburg Zoological Gardens did. They had passed the whole of this severe winter out of doors, and for this reason were getting rather mopy towards the end of the time. All of a sudden this behaviour changed; they paired off, and courtship began, in spite of ten degrees of cold; I then knew that spring would soon arrive: sure enough it came, and when the first eggs were laid, ice and snow had vanished.

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* The translators have omitted some portion of the author's ideas upon the subject of reason in animals, as they are entirely of a controversial character, and not suitable for the general reader. To modify them were an injustice to the author, which it would be quite against the wishes of the translators to commit; at the same time any of their readers who may desire to learn the entire views of the author upon this subject can refer to the original work, page 96, second edition.—*H. M. L.—W. J.*

It is difficult to give an explanation of these facts; that they should be the effect of chance is impossible; the great number of individual cases goes to disprove such an explanation. The length of time between the changes is a sufficient negation of the idea that it is possible to attribute them to an extraordinary sensibility of atmospheric influence. Assuming that presentiment in a bird is purely an internal sensation of which it becomes conscious, it must seem incomprehensible to us how it can make arrangements months beforehand in anticipation of the dreaded change, for we can have no idea of so delicate a nervous organization in an animal.

The mechanical knowledge of some animals, which is also ascribed by many to instinct, appears to me easier to be understood than their knowledge of the weather.

We speak of the mechanical instinct of insects generally with more astonishment than admiration, although the latter is not entirely wanting, and one raises this instinct to the rank of the supernatural. "One bee builds its cell the same as another, and one silkworm spins its cocoon as its fellows," it is said, and with this we seek to explain the workings of instinct, whereas we ought first to ask the question whether the bee is capable, by reason of its form and the shape of its limbs, to do otherwise than carry pollen, and to use this in the manner we know it does; or whether the silkworm is capable of spinning a structure different to that spun by its progenitors. It is not at all improbable that the answer which enquiry at present is not able to give would gainsay this. Birds of the same species all build their nests in a similar manner. "Every species," says Naumann, "has something peculiar in the material and formation of its nest, from which the bird never deviates, except through dire necessity, and then only in occasional instances." In general this assertion is correct: I do not care to cite this in favour of instinct more than I formerly have done, for it may be equally brought forward as a proof in favour of reason. How much the young bird learns from its parents it is difficult to say: that it does learn much, however, may well be assumed, for the old birds teach their young before our very eyes. Why, then, I ask, is the bird not capable of building its nest? That the nest is built in such and such a manner, and no other, is partially explained by the formation of the beak; that the older mothers build better nests than the younger ones has been proved by observation; that the latter as well as the former do not always rigidly adhere to the same materials is a well-known fact. Supported by my own experience, I believe it to be quite possible that the bird learns how to build its nest partly while still a nestling, and partly from later observation of the work of older members of its species.

Were instinct, as is generally assumed, the result of a special law which the animal is compelled to obey, then this instinct would not deceive the trustful creature as it so often does. Thus the blowfly, which deposits its eggs in tainted meat, upon which its offspring feed, sometimes condemns the latter to starvation by mistaking the stinking plant, Stapelia, for carrion; the higher animals, also, often commit mistakes, which likewise lead to their destruction. Birds of passage are frequently grossly deceived in the weather; returning at the usual fixed period to their homes, they find instead of verdant spring a mantle of snow and ice. Many thus die of hunger; they cannot make up their minds to return whence they came, and, hoping against hope, they perish!

Every unprejudiced observation gives proof of the existence of reason among birds, and that, too, of no ordinary calibre.

All birds possess the power of recognizing and estimating those circumstances which would lead to any alteration in their line of conduct. From this they betray a clear consciousness, and a decided independence of action or free-will, by which they know how to carry out what appears to them expedient. They soon learn to distinguish friends from foes, to choose suitable dwelling-places, to avoid dangers, to obtain food, and avail themselves, with deliberation and wonderful cleverness, of existing conditions, without instinctive action being in any way concerned in the matter. According to the usual acceptation, instinct is purely a more or less compulsory action; reason is exactly the contrary, inasmuch as it is not the working of blind impulse, but much more the art of bringing the results of past experiences to bear upon a question.

Authentic observations have proved that the experiences made by birds are remembered by them many years afterwards. Our immortal Naumann relates the following example in his splendid work upon the 'Birds of Germany:'—"For a long time I kept in my garden several wild Geese (*Anser segetum*); some of these, which I had wounded and been able to take alive, became so thoroughly re-established as to be able to fly with ease, so that I was obliged to cut the pinion-feathers after the yearly moult, to prevent their disappearance. To perform this operation it was necessary that they should be caught, and to effect this I used to drive them into a corner, where I enclosed them with a long piece of net: in their efforts to escape they became entangled, and were thus easily captured. This periodical battle was not much relished by the birds: indeed, after having been subjected to this treatment for several successive seasons, they never forgot it; and on my appearance each year, with the net, got into a high state of alarm, and took refuge in the pond, thus effectually preventing my object. Their timidity became at last so great, that it was only necessary for me to take a string and, with the assistance of another person, pretend to encircle them, to cause the greatest terror in their ranks. Yet, nevertheless, they remained so tame, that I could call my favourite from among them and stroke it, thus sparing the bird the ordeal of the net for the future."

This anecdote goes to prove the excellent memory of the feathered tribe, which, indeed, even the uninitiated have opportunities of observing in our common birds of passage. The Stork, the Swallow, and the Starling conduct themselves with such perspicuity on their arrival with us, that we can have no doubt that they return to their old habitations with perfect consciousness of the same, and greet old friends with pleasure. Tame birds give still stronger proofs of memory: they cherish the feelings of love and hate most heartily. I shall return to this subject at a future time; but will, however, relate one curious fact on the authority of Lentz. This excellent enquirer possessed a Cock, which had quarrelled with one of the Hens in the yard, a perpetual state of feud existing between the parties; matters became so bad at last, that the person in charge of the poultry was obliged to get rid of him: "I gave the Cock away to the watchman of the village," says he, "in exchange for another one. Only two years and a half after, I had the misfortune to lose this bird, so I sent to the watchman and bought my old friend back again. No sooner replaced in his old quarters than, casting a glance of complacency on all around, he flaps his wings, and, after a good crow, greets his old companions with the greatest pleasure; when suddenly his attention is attracted to the particular Hen who was the direct cause of his previous dismissal from the court. His glance became at once serious; darkened; and, at last, menacing. The poor Hen looked timidly up. In short, after a few minutes, the old business began afresh, just as it used to be two years and a half ago; and I was once more obliged to seize my quarrelsome friend, and send him into exile again."

I could easily add to these anecdotes many other examples; for the conduct of most birds is the result of experience remembered and utilised. The Peregrine

Falcon, so shy in its habits, often takes up her abode upon some high building in a populous town, because her experience teaches her that she can live there in peace and safety. The cautious Crow may be seen, during the winter, fearlessly walking in the streets of towns, and becoming almost domesticated; in the suburbs, however, the same boldness is not so noticeable; while outside the gates they remain as shy as in the summer-time. The self-same species of Vultures, which in Southern Europe are more difficult of access than all other birds, are to be seen walking about in the villages of North-eastern Africa in the most unconcerned manner possible. In Spain I only succeeded in procuring one single specimen of the Kestrel (*Tinnunculus alaudarius*), their excessive shyness rendering all attempts at approach on my part useless. At the same time this species, together with its cousin, the Lesser Kestrel (*Tinnunculus cenchris*), breeds devoid of all fear in the towns of Malaga and Madrid, as well as in Athens, where they are very plentiful. In our towns the domestic Pigeon may be seen running before one in the streets, at the distance of only a few feet—passing carts causing them to move only just as far as is necessary to avoid being run over. On the "Brühl'schen" terrace, in Dresden, I have seen the Ring Dove, usually amongst the shyest of the shy, flying from tree to tree, and heard the rustling of their wings above the heads of the passers-by, as though they were in the remotest depths of the forest. To my great astonishment I was informed that they bred regularly among the trees of the much-frequented "Ostraallee." The Woodpeckers in the "Grossen Garten" amused themselves with their usual pursuits close to, and utterly regardless of, the numerous loungers; and the Golden

Oriole whistled cheerily on the trees, in close proximity to a band of music which was playing at the time.

Those who have observed the above-mentioned birds in their natural state, and are acquainted with their shyness, are not a little astonished,—not at their conduct, but at their intelligence. What an astonishing amount of cleverness to have caused such a revolution of their usual habits! Each and all are aware exactly how far it is safe to go; they learn with reason, by observation, and from experience, that in the before-mentioned and similar places they have naught to fear at the hand of their principal enemy—man. Some, especially the common Sparrow, are thoroughly governed in their actions and habits by those of their entertainer—man. They watch him with unwearied attention; so that even while on the most intimate terms with him, they take good care of their own safety. Their intelligence becomes wonderfully developed by their contact with him. All the good-will and friendship which they entertain for their supporter is only apparent; they never trust him. An injury done to any individual of their species becomes traditional, and is never forgotten. Besides which, they always fear some fresh trick or deception, which renders them particularly distrustful of the simplest thing, and to regard it askance, until they have quite satisfied themselves whether or no a trap is intended. No amount of scaring can keep them off where food is the question and crops are to be preserved from their depredations; the scare-crow and clapper are alike inefficient for the purpose. It is, however, equally useless to set traps for them, as they are sure to keep clear of them. All their acts take place only after the most mature deliberation, and they readily allow other birds to discover whether it is a question of safety or danger, previously to examining for themselves. They will freely pick up the crumbs I have strewed for them before my windows, so long as I remain working at my writing-table; no sooner, however, do I turn even my face towards them than they are sure to decamp! The town Sparrow is to be distinguished from his village cousin in the same manner as the "street Arab" is from the village boy. Both are alike artful and ill-mannered; but to the first there is "nothing new under the sun." One must really be blind not to allow these creatures to be possessed of reason!

Even those birds which have less confidence in man unmistakably show similar powers. They distinguish with exceeding accuracy friends from foes, and learn from experience to know the effect and value of endeavours to injure them. Sportsmen are well aware that if they wish to get at birds difficult of approach it is useless to walk straight towards them, but act rather as if they would walk past them, taking care not to look at them, or they will instantly apprehend danger. Ravens, Magpies, Jackdaws, and Rooks, the shrewdest, perhaps, of the feathered tribe, distinguish with facility the sportsman from their friend the ploughman: they walk as carelessly after the plough of the latter, as they shun the gun of the former. Our peasants, for this very reason, assert that Rooks have the power of smelling powder in the gun, which certainly is a fallacy. The creatures, however, are cognizant of their enemy and his terrible weapon; one can put a whole colony of Rooks to flight with a wooden imitation of a gun. From experience they are aware, however, that an unarmed man is not dangerous, while, on the contrary, they are perfectly aware of the use of the suspicious-looking machine carried on the shoulders of the gunner. Whoever would wish to be a successful sportsman in foreign countries ought to adopt the dress of the inhabitants, as ours do the guise of a woman carrying a basket on her back, when they would come within range of the Bustard. From this it is evident that birds are thoroughly capable of distinguishing; they even learn to know a particularly dangerous individual. "In the year 1820," relates my father, "I possessed a live Eagle (*Aquila fulva*), which required no small amount of food for its support: this demand fell heavily upon the neighbouring Rooks, as they furnished the principal portion of his sustenance. In a very short time their powers of comprehension became highly developed; and I had the honour of becoming personally known to every Rook in the vicinity. As soon as I was observed by any one of them, it immediately called out vociferously. Thus warned, its companions immediately placed a distance of 150 to 200 paces between us."

I have often observed the same myself while shooting, but have never come across any bird who succeeded in frustrating my endeavours with such remarkable cleverness as the African Marabou (*Leptoptilus crumenifer*) after our first hostile meeting. All other long-legged birds are shy; he, however, estimates the danger, and then scoffs at the same. He is a thorough calculator: every movement, his gait, even his glance is deliberate and decided. I killed one in the Khartoum, in the slaughter-yard, among the many that frequented it, with a shot-gun, but never a second. After the death of their comrade they did not permit anyone to approach within 150 yards. I then resorted to my rifle, and dropped another at that distance: from this time forth I was ever unsuccessful.

After this new warning all the Marabous considered it necessary to keep at a distance of at least 300 paces from a white man. If I followed them, they did not take to flight, but, nevertheless, did not allow me to approach any nearer. When I walked quickly, they accelerated their pace; when slowly, they did the same; and if I remained stationary, they did not disturb themselves in the least. This chase afforded as much amusement to the bystanders as it did disappointment to the sportsman. In a state of exasperation we fired at distances of from 300 to 400 paces; but this scarcely disturbed them, as they soon perceived the inefficacy of the shot. They equal the Vulture in greediness, perhaps, indeed, surpass them; but they always take the precaution of placing sentinels in elevated positions, when their banquet, a carcase, lays in a valley or behind hills, which could render it possible for the epicurean company to be disturbed. Vultures never do this.

Wishing to give another example, I will refer to our Bustards, which never alight in a place near which a foe can be concealed or a rifle-shot reach them. They are so conversant with the districts they frequent that they know how to avoid all dangerous places. Wild Geese fly to the lakes, in which they wish to alight, out of rifle-range, and then suddenly dash down to the centre of the glassy surface. Cranes, when alarmed on dark nights, circle around their roosting-place at a slight elevation; but on moonlight nights always keep out of shot. Like all other birds they do not like to change their roosting-place; they never, however, return immediately, but send several spies out to determine first whether they can come back with safety. Rooks do the same. One may gather by the note of those Cranes which act as sentries that they are old birds, and are doubtless despatched on that service on account of their greater experience and cleverness, though the younger ones may have already arrived at maturity. The inexperienced are instructed by the gray-beards of their species, and are thus made thoroughly acquainted with every possible danger, and indeed they are, as we will state farther on, compelled by force to take flight at the proper moment.

Many birds show their intelligence by the manner in which they take wing, as well as during flight. Woodpeckers, on the approach of an enemy, immediately retire to the opposite side of the tree; and thus, screening themselves from view, climb to the topmost branch ere they take flight. Marsh and water-birds show the greatest acuteness in selecting an opportune moment for flight. When swimming on a pond or tank, and the sportsman shows himself from behind the dam, retiring again, so as to obtain a more favourable shot, they always avail themselves of the moment he disappears from their sight to fly the danger. One would imagine that the object of alarm once out of view they would remain quiet and unconcerned. Not so; they reckon, and with justice, upon a reappearance of the enemy, and thus seek to make the best use of the intervening moments.

Small birds thoroughly understand how to make use of every advantage available when chased by birds of prey. We were once enabled to observe how a Redstart managed to escape from the claws of a Sparrow-hawk. The little bird had the good fortune to be in the neighbourhood of a thick elder-bush, but was so hard pressed by the Hawk that it had not time to take refuge in the bush itself, and so kept circling round between the extreme ends of the branches, which its persecutor could not do; it thus won several slight advantages, till at last it was able to take refuge in the thickest part of the tree. My father relates a wonderful anecdote showing the intelligence of the Great Crested Grebe: "In July, 1818, I was making a tour with my two friends, the 'Forster' Bonde and Dr. Schilling, to the Friessnilzer Lake. A splendid specimen of a male Crested Grebe struck our attention. Bonde and I got into a punt which lay moored by the side of the lake, and Schilling posted himself on the shore, at a place where the water was very shallow; we were obliged to do this, for it was in the days of flint guns, and by getting the bird in fleet water his possible escape by diving was rendered more difficult. By careful rowing we succeeded in driving the Grebe into the shallow water. The bird now appeared to be so thoroughly in our power that I already exclaimed, 'Now we have got you!' Our boat had approached him so close that escape, whether by diving or flying, seemed impossible—he must fall either to us in the punt or to Schilling on the shore; yet, in spite of all our calculations, he found means to escape, which we naturalists had never dreamt of: he allowed himself to drift close to the lower shore of the lake, where a large herd of cattle were grazing; he then rose, but in such a manner as to fly straight towards the herd, so that we could not fire without hitting a cow, and these were feeding so close together that there was no space left between them. As long as the cattle served as cover the bird continued his flight close to them and low down, and thus in a short space was out of shot. No sooner, however, had he reached the end of the herd than rising high in the air he made for the upper part of the sheet of water, where he disappeared among the reeds and rushes, which grew there in abundance. 'Bravo!' cried I, 'that was clever!' and much as I should have liked to have had the bird for my collection, I was delighted to see the skill he had shown in escaping, where escape seemed to us impracticable."

All birds soon learn to know their enemies. Rooks, Swallows and Water Wagtails, which are those most given to mobbing birds of prey, take very good care not to disturb any that are likely to prove dangerous, because either they or some one of their species has learnt from experience that such conduct is hazardous in the extreme. A Kestrel or Sparrow-hawk is certain to be mobbed and insulted, whereas a Hobby will be respected or feared. On the Lake of Mensaleh I saw Ducks sitting undisturbed in close proximity to the Fish Hawk (*Pandion haliæëtos*), while the appearace of a Sea Eagle (*Haliæëtos albicilla*), or any large Falcon, occasioned the greatest alarm, and immediately put them to flight. How closely birds can discriminate, and how correctly they can determine each individual enemy, and the precautions they take for their own safety may be well imagined from the following observations of the Freiherr V. Seyffertitz. An immense morass situated in the neighbourhood of that observer's residence was at certain times of the year covered with thousands of Ducks, and these attracted numerous birds of prey of different species. One morning a Sea Eagle approached the marsh with lazy flight, doubtless with the intention of picking up one of the Ducks for breakfast. As soon as the latter had observed the enemy, they immediately took wing, flying hither and thither over the morass, well knowing that the sluggish bird was not able to strike a Duck on the wing: he chased them here, there and everywhere, but, after a quarter of an hour's useless pursuit, gave it up in despair and retired from the scene. No sooner had he vanished from sight than the Ducks returned to the water, swam about, and sought their food as before. Soon after, a Peregrine Falcon made its appearance, a dangerous and active bird, which rarely strikes its quarry sitting, but can easily do so when on the wing. The Ducks were evidently well aware of this, and, instead of rising from the water, kept continually diving, so as to escape the talons of the enemy, and in this they were thoroughly successful. The Falcon flew close over them without attempting to strike, for its object was simply to force them to take wing: in this it was unsuccessful, and it also was obliged to abandon the field discomfited. On the same day, however, a Goshawk (*Astur palumbarius*) came to the marsh: this bird being able to strike a bird whether sitting or on the wing with equal facility, is the most dangerous enemy Ducks have. Now there was evidently nothing more to be done: Seyffertitz knew of no means of escape, and sat anxiously watching the result. The fate of one of the Ducks appeared sealed. But even under these circumstances the birds knew how to help themselves. As soon as they saw the Hawk they all got close together, and flapping with their wings produced such a shower of spray as to raise an opaque cloud between them and their pursuer. The Hawk, however, was not so easily to be baffled, and dashing along close over the water passed through the sheet of spray more than once, but not being able to see a bird it could not strike. As soon as the Ducks were convinced that the Goshawk had taken its departure they desisted from their manœuvres and returned quietly to their usual occupations.

Not a few birds manage to shield their young from danger by hiding them from view. All those species whose dress assimilates the ground, rushes, sedge, leaves, &c., in colour, are well aware of the benefit to be derived from this resemblance of tints between their plumage and the surrounding cover, and use it to the best advantage on all occasions. Partridges, Ducks, many Waders, the Spotted Crake, Snipe and others, squat close to the ground or among the grass, reeds or other cover when an enemy appears: the Bittern and the Little Owl assume curious positions, which render them unrecognizable; the Hoopoe throws itself flat on the sand, expanding both wings and tail, on the approach of a bird of prey, and in this position resembles a coloured rag rather than a bird; the Wryneck does the same, turning and twisting its neck, however, in such a manner as to resemble a snake. The young of birds which breed on the ground are instructed in the art of hiding as soon as they are hatched, while the mother seeks to entice the enemy from the spot. Almost all Partridges and Waders, as well as many of the Warblers and others, show considerable cunning in deceiving their pursuers. At the approach of man or any four-footed enemy the mother flutters slowly away from the nest only a few yards in advance of her pursuer, trembling and falling on the ground as though she had a broken wing or was otherwise wounded; by this ruse the enemy is gradually drawn away from the nest; and as soon as the faithful creature thinks that the brood is out of danger, she dashes up into the air, and vanishes with a cry of pleasure.

In procuring their food many birds show a great amount of intelligence. I have already described the performances of such roving thieves as the Sparrowhawk, and need not, therefore, again refer to their sneaking mode of catching their prey. There are, however, others among the numerous feathered tribes which are very highly gifted. According to Faber, the old story of the Raven getting at the flesh of crustaceous animals, by letting them fall from a height on to the rocks below, is certainly no fable. Spaniards assert that the Lämmergeir, whose food principally consists of large bones, breaks them in the same manner; whence they have given the bird the title of "Bone-smasher." I myself have often observed this bird rise, time after time, from a rock, and descend again, as though it were occupied in taking something up in the air and letting it fall again; and this, to me, otherwise inexplicable proceeding, strengthens my belief in the above assertion. Parasitical birds depend on the weakness or carelessness of other birds to take their prey. A Kite (*Milvus parasiticus*), common in the East, pesters Falcons, Eagles, and such like, with such bold importunity, that these throw them a portion of their booty. The Skuas persecute other Gulls to such an extent that they are forced to throw up the prey they have swallowed, which the former immediately pounce upon. Gannets and Terns do the same. These pirates readily distinguish those birds which they can plague with impunity from those which do not yield to their persecutions. When several different species are to be seen living together, and each has to look sharp after his food, one finds numberless opportunities of observing how they seek to over-reach one another. The Laughing Gulls, in the Hamburg Zoological Gardens, which are allowed their liberty, keep a regular watch over the diving Ducks, and often rob them of their booty as soon as they rise to the surface. They narrowly observe those that dive, awaiting the instant of their return to the surface, at which moment if the Duck has succeeded in catching a fish, they immediately dash down and try to snatch it away: this they often succeed in doing, for the diving Ducks are in the habit always of swallowing their food above water; and, in spite of repeated diving to gain time, they are generally unsuccessful in their attempts to save their dinner. Coots are as active and quite as impudent as the Gulls. I have seen them snatch food out of the very beaks of the Swans, which the latter had just brought up from the bottom. These examples which I have quoted are by no means uncommon. Other instances have been observed which are still more remarkable. A friend of mine, a clergyman of undoubted veracity, told me the following charming anecdote of a tame Magpie. "This bird had its abode among the Hens and Chickens in the yard, though under rather disagreeable circumstances, owing to its being chased at meal-times by the Fowls, &c. In these squabbles the Magpie was generally attacked by two Hens at once, and, getting the worst of it, had to stand by and see his enemies feed,—unable to partake of the feast himself. This state of things produced a bitter feeling, which soon gave the spur to the natural talent for artfulness and slyness, so inherent in the Magpie, and led the bird to substitute roguery for the strength he did not possess. His tactics were these:—he now began the quarrel himself while the Fowls were feeding; these, angered at the interruption of their meal, immediately left their food to chastise the intruder, who, however, screaming and aggravating, kept hopping away just in front of the enraged enemy, till he had at last enticed them some distance from their food; then, suddenly taking wing, back flies Mr. Magpie, snaps up a fine piece of potato, which he bears off in triumph, and hides up in his store-house under a barrel. This game is carried on until sufficient provision has been accumulated." The Goose, so often spoken of as stupid, sometimes gives proof of a character quite the reverse. A Gander had taken up his abode in a wheat-field; at first the bird fed with the greatest nonchalance, until discovered and repeatedly driven out; after which he only sought the field and fed when no one was near. Did any person approach he immediately squatted close to the ground without uttering a sound, and even allowed the whole flock of village Geese to pass by without betraying himself.

My father has immortalized the intelligence of a Carrion Crow in the following anecdote. "As genius distinguishes individuals among men, so cleverness raises some birds far above their fellows. I once met with a genius such as this in the person of a female Carrion Crow, which had built her nest in a small wood of tall firs and beech trees, standing about 200 yards distant from the manor of Oberrenthendorf, and some 800 from my dwelling. When this bird was hungry she showed a boldness and cleverness which astonished everybody, and caused universal consternation. If a flock of Geese and Goslings were not very carefully watched, down pounced the Crow, seized hold of any little Gosling which might have strayed some distance from the old birds, and, killing it with a few blows of the beak, picked it up, by the neck, in her bill, and away with it to her young at home; young Ducks and Chickens shared the same fate.

"One day a servant girl, who was walking in a garden, happened to lay down part of her breakfast—a nice well-buttered piece of bread (she had just finished a piece of the staff of life, minus the butter!)—on the grass; the girl had not gone many paces, when down swoops the Crow from a tremendous height, picks up the dainty slice, and flies away with the same to her nest, utterly regardless of the outcry made by the rightful owner. In those days the farming lads on the estate wore the short jackets, then the fashion in those parts, and always carried their breakfast with them in the pockets of that garment. When the sun was well up they used to lay their jackets aside on the bank at one end of the field, so as to enable them to plough with greater comfort. One fine morning, as soon as the men were far enough off, down comes our friend the Crow, pulls out one lad's breakfast and flies off with it. The despoiled one was well laughed at by his companions, who vowed that they would take very good care and not be robbed in a similar manner. The next day they laid their jackets with the pockets carefully covered up, and so folded as to lie quite undermost. This time the bird quietly allowed the ploughmen to get so far away that they could not see the bank, owing to the unevenness of the ground; this done the Crow descended, turned the jackets upside down, and, after making a good feed, decamped with a nice supply for her family! After this the men were obliged to weight the clothes with heavy stones, so as to prevent the bird from continuing her depredations.

"In the meantime the Crow had become aware of the benefits arising from inspection of the men's clothing; and from that time she examined every jacket she came across in either the yard or the out-buildings. When the shepherds happened to have any pieces of bread over from their breakfast, they used to put it in the pockets of an old stable-jacket, which hung at the open stable-door.

The Crow would rummage out the pockets of this garment whenever she could approach it unseen, and was even known to fly right into the stable in search of booty.

"This creature, universally detested, was, through her uncommon cleverness, an endless source of amusement to me, and, as may well be imagined, I was repeatedly asked to shoot her: to this request, however, I always turned a deaf ear. How could I have the heart to put an end to such an amusing companion! I always used to think of the old proverb, unfortunately so little acted upon: 'Little rogues are hung, when great ones get off with impunity.' So I let her live in peace for ten long years."

I am thoroughly convinced that many similar observations are made, of which we hear nothing. We are, also, still too little acquainted with the mental life of birds to observe everything with sufficient care. Truly, indeed, must the bird

> "Wirken und streben,
> Und pflanzen und shaffen,
> Erlisten, erraffen,
> Wetten und wogen
> Das Glück zu erjagen"

to obtain its subsistence.

Birds, like men, calculate and act in companies. I have often remarked Pelicans while fishing, and noticed that they dislike working alone, much preferring to do so in company. A large number of them unite together for a common purpose: they form an extensive half-circle across the entrance of shallow bays or creeks, and then swim slowly towards the shore, thus cutting off the retreat of all fish in the bay into deep water. In the Egyptian canals a flock of these birds would separate into two divisions, each alighting at either end of a certain length of canal, and then, swimming towards each other, drive the fish before them. Hobby Hawks (*Falco subbuteo*) will catch Swallows in company, which they could not do singly, the latter being too quick for them, so one of the pair flies above the enemy and the other below, in such a position as to intercept the Swallow when driven towards it. Rooks, according to Naumann's experience, the most destructive enemies of the cockchaffer, shake that destructive beetle from the boughs of trees, while others of their species devour the fallen prey: this must certainly be called systematic hunting!

We have known, however, other quite different proofs of reason in birds from the examples hitherto given. Long intercourse with the most gifted of these creatures, especially when in captivity, gives every observer the opportunity of witnessing in birds what to him has hitherto appeared incredible. It would take up too much space were I to relate everything bearing upon this subject which has come under my notice. I must, therefore, limit myself to some few striking examples. It is well known with what ease birds may be taught to pull up seed in a little bucket hung up in their cage. It is equally well known that Canaries may be trained to go through some portions of military exercise: they will carry a small gun, fire it off, fall down and lay as though dead, &c. These accomplishments give us just cause for astonishment; and yet they are nothing in comparison with those of other birds. A trained Falcon accomplishes incomparably more than a tame Canary or Greenfinch. She gives the lie to her natural character when enlisted in man's service; becomes, like the dog, the slave of her lord; and renounces all her former habits of life to serve him. The Falcon does not serve against the grain, but rather with pleasure and exultation, and is passionately devoted to the chase, not on her own account, however, but for her master's,—exactly as is the dog. The Chinese Cormorant (*Phalacrocorax sinensis*) has to catch fish for the cunning "Celestial:" its master, however, takes care to put a ring round its neck, so as to prevent the same from being swallowed.* The Falcon, however, is perfectly free, and brings the captured booty to her master, without helping herself to the smallest portion. Such conduct can only be accomplished by cultivated reason exercising undisputed sway over natural inclination. It is reason which teaches a good Falcon the ways and means necessary to attack and overcome animals, which hitherto she has never molested. The migratory Falcons of Northern Africa (*Falco peregrinoides* and *F. barmiacus*), which are used for the chase by the Bedouins of the desert, stoop at the head of the antelope, and by screaming and flapping their wings so terrify the creature as to detain it until the hounds come up to finish the work. The Hobby Hawk, so celebrated in the story of the Emperor Frederick, was trained by a Swiss monk to such perfection as to strike wild Geese. The bird always struck at the Goose's neck, where it held on and severed the jugular vein, which naturally caused its prey to bleed to death, and then fall to the ground. We ought not to be astonished when we read, that in olden times as much as a thousand florins have been paid for a well-trained Falcon; or that Philip Augustus in vain offered the Turks a thousand gold pieces as a ransom for his favourite Falcon, which had escaped during the siege of Akkon; neither need it appear so very shocking to us that the Bedouin should give utterance to the following proverb,—"A good Falcon, a noble hound and a swift horse are often more valuable than twenty wives,"—for the manners and customs of his country render it easy for him to get rid of a bad wife, while even there it is extremely difficult to obtain one of the above-named creatures in perfection.

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* Recent travellers do not confirm this statement.

It is certainly true that with these animals their reason becomes awakened, developed, or cultivated by their contact with man, but we do not affirm that any action of a bird, which is to us incomprehensible, is originally due to man's agency; but, simply, that birds adopt much which is in harmony with their altered position or circumstances. My tame Ibises used always to walk into the dining-room in our house, at Kartoum, the moment they saw the plates and dishes carried in, because they were fully aware that they would then be sure to have some share in the entertainment. If we did not immediately give them something, they would hop on our chairs and peck and play about us, nor, indeed, were pleading glances wanting. They were not taught this by anyone; like our domestic pets they soon learnt to know their names, and to come when called. Their intelligence showed itself in their whole demeanour, and reminded me very much of Von Seyffertitz's Crane, to which I have before alluded, and of which bird's history I will acquaint my readers in the words of its owner:—

"The extraordinary cleverness and trustful character of my young Cranes," writes our excellent observer to my father, "have reached such a degree of cultivation that they engage the attention and awake the astonishment of all who see them. In a very short time they not only lost all fear of man and domestic animals, but even sought the companionship of the former. They knew exactly all the houses in the place wherever the inhabitants had once given them anything, and never omitted to pay them a daily visit. Without the slightest timidity they entered the lower rooms of our house, often remaining there some time and feeding out of the same dish with a very large pointer. I fed them three times a day, and they were thoroughly aware when this took place; they arrived at the proper time and announced themselves by screaming. If the time seemed too long they marched into the kitchen and waited by the fire until their dinner was ready. They would accompany me and others in our walks, following us like dogs, sometimes taking a flight they gambolled about in the air, alighting occasionally, and then continued to accompany us. It was a pleasure to have these charming creatures about us."

One of these two birds lost its life through an unlucky accident, so that the male of the pair only remained. Von Seyffertitz relates the following of the survivor:—"During the winter my lonely Crane had become not only more beautiful, but had greatly improved in intelligence. His bearing had become more dignified, his manners and ways more droll and his cleverness increased. He had got over the loss of his companion and accustomed to solitude, only it appeared to him necessary to return to the business of active life. As it was out of my power to replace the loss he had sustained by another of his own species, he helped himself: he chose a fresh companion, with whom he contracted a new friendship, which still exists. You will hardly imagine the one he chose among the many creatures surrounding him; it was none other than a bull on our estate.

"How and from what reason the friendship sprang I cannot exactly make out, though it appears to me that the bull's loud bass voice produced some especial effect. To be brief, the two became fast friends ere spring time; the Crane accompanies his horned favourite daily to the pastures and often visits him in the stable. He treats him always with the most marked deference and evidently considers him as his superior. In his stable he stands respectful and erect by his friend, as though obliged to await his orders; keeps the flies off him; answers when he roars; and takes every possible means to pacify his friend when enraged. When the bull is among the cattle in the yard he plays the part of adjutant—generally walking about two paces in his rear, often dancing round him, bowing respectfully, and in fact behaving in so droll and comical a manner that no one could look on without laughing. In the afternoon he follows the bull and the whole herd to the meadows, a distance of more than two miles, and returns with them in the evening. The bird generally follows some few paces in the rear of his friend, or else walks alongside of him, or suddenly precedes him and runs on twenty yards or more, and then turning round bows down before his august companion until the latter has come up with him. These proceedings are carried on through the whole village, to the intense amusement of the inhabitants, until the farmyard is reached, when, after repeated bows and demonstrations of affection, he takes leave of his respected companion.

"This bull is, however, the only animal on this estate which he treats with such distinction. Over all the rest he asserts his superiority, and fully understands how to uphold it. In the village, and especially on the estate, he plays the overseer, and is a great stickler for order; he acts the part of sheep-dog to the herds of cattle.

Among the poultry he permits no fighting; keeps a good watch over them; and at the slightest sign of a feud constitutes himself arbitrator between the parties concerned, and punishes the delinquent according to his deserts. They all obey him, yet he never commits any injustice; on the contrary, he lives in perfect peace with all well-conducted animals. He cordially detests anything approaching disquiet or quarrelling, punishing the authors of any disturbance according to their size: horses, cows and oxen feel the full weight of his beak, while Ducks and Chickens are treated with more indulgence than Geese and Turkeys. He shows in these cases an acuteness worthy of human beings. The Turkeys are the only creatures which ever attempt to disregard his orders or to question his supremacy; when these unite together against him he not unfrequently comes off second best. Not long ago he found a Turkey-cock and a Barn-door Fowl fighting together, and immediately separated the combatants; the Fowl retired without opposition; the Turkey, however, only followed his example after a fierce encounter with the Crane, in which he got worsted; as soon as the Turkey gave in the Crane returned to the Fowls, sought out the Cock and administered the requisite chastisement. He looks after the horses in the yard, especially when standing harnessed to a cart or waggon; in this case he walks straight up to them, looks fixedly at them, and if they show signs of restiveness he slightly raises his wings, stretches his head and neck as high as he can and screams his loudest; if this does not suffice he inflicts a series of hearty blows with his beak. Recently there was a horse and cart standing in the yard; the Crane immediately went to his post; the horse began to get restive and would not obey, and the bird administered such severe punishment as to make the horse's nose bleed. A short time after the same horse was again standing harnessed to a cart in the yard, when the Crane immediately walked up to him as before: no sooner, however, did he make his appearance than the horse recognized him directly, and turned his head on one side to shelter his nose, whereupon the bird made him a profusion of bows, danced round him, and did everything in his power to testify his affection, just as though he desired to make up for his past severity. With the sole exception of his bovine friend, the Crane had never before been known to favour any living creature in such a manner; for he is much too proud to associate with the mobocracy!

"Among those animals most forcibly made acquainted with his superiority are the foals. When they appear in the yard he gives them to understand, by his haughty manner, what they may be led to expect if they do not conduct themselves with propriety. So as to keep a good watch over them he accompanies them everywhere, and should they be too merry and jump about he immediately pursues them with loud cries and punishes them all round. He often runs great risk of being kicked or run over, but manages, however, to get out of the way with great agility.

"He keeps the cows and oxen in order both in the yard and in the fields, and assists to drive them backwards and forwards, and always separates them if they take to butting one another. If they refuse to obey he tries the effect of his loud-ringing voice, which generally so alarms them that they speedily take to flight. In the fields he keeps the herd together, and keeps them from getting into mischief. One evening he brought home, unaided, a whole herd of heifers, and drove them into the stable. This bird has undertaken so many jobs that he is employed the whole day long.

"Recently he returned to his other duties, after having assisted in driving the village herd of cattle to the pasture. In passing through the hamlet he found some heifers belonging to the herd which had remained behind, whereupon he instantly set about driving them down to those in the meadows; he drove them safely through the village, but frightened them so by his screams and blows with the beak that they ran away, and took the contrary direction to where the rest of the herd had gone. He ran quickly after them to try and bring them back, but to no purpose. The chase continued for over two miles, finishing in a field of corn belonging to the neighbouring village, where the cattle and their feathered herdsman were pounded: the latter, however, would not allow himself to be caught, but returned home, disconsolate at his want of success.

"At times it required all his courage and cleverness to carry out his intentions. I had the pleasure once of witnessing one of his heroic battles. One day two oxen chanced to break into our garden; the Crane saw them, and, greatly enraged at their ill manners, ran after them as fast as he could, to put an end to such a nuisance and severely punish the trespassers. He immediately tried to drive them out of the garden, which the oxen, confiding in their strength, did not seem to see. Neither screams nor blows of the beak had any effect at the commencement, for the oxen, enraged at the latter, kept savagely charging the Crane, without showing the slightest signs of any intention of retreating. I felt anything but comfortable in the matter. The bird, however, did not evince the slightest signs of fear; but, on the contrary, showed a bold front to the enemy. It was now a tremendous battle; the oxen charged the bird, seeking evidently to transfix him with their horns. He avoided their blows, however, with the greatest address, springing either up in the air or on one side, and, advancing, greeted one and the other with a shower of blows on the head from his powerful beak. At last the oxen were beaten, as they received blow after blow, without, on their side, having been able to return a single one. Thus they lost courage; and, feeling themselves worsted, took to flight, followed by their victorious adversary.

"To us he behaves in the most polite and amiable manner. When hungry he generally presents himself under my mother's window, who is exceedingly fond of him, and feeds him several times during the day. Here he calls: if he is not heard he enters the house, calling louder and louder, till at last he takes refuge in the kitchen, where he seeks his friend and caterer, the cook, to whom he details his requirements. He shows his pleasure at her appearance by uttering the familiar cry, 'Coor, coor, coor, coor,' and makes her understand, by all manner of antics, how he wishes to be fed. If he wants bits of bread from the hand, which is his principal food, he points to it with his beak; should he, however, wish to be fed on the floor, he lays a piece down there, and then she must throw all the rest there. This bird always shows most obedience to my mother and her servant, and he misses the latter immediately she is absent, in which case he seeks her with the greatest diligence, stealing into the house and under her window, listening attentively for the sound of her voice or her footstep, for he recognizes the latter from afar. While young the cook was always obliged to carry him to his sleeping-place, owing to his great dislike to going there himself. If the weather was bad he liked to be taken to bed early; if, on the contrary, it was fine, he would hide up in the evening at the approach of his keeper. Now he no longer seeks her assistance but his friendship for her is still the same, and it is only when she allows him to call in vain for his food, when hungry, that he shows his displeasure.

"He is never ungrateful to those who are kind to him. An insult from a friend he regards with the greatest indignation, though he never so far forgets himself as to retaliate in an indignant manner, and soon either forgets or forgives the injury done him. His politeness to women is not to be denied, always treating them with deference; he reposes the utmost trust in them, and will undergo anything at their hands, even insult, without resenting it. With strangers, however, he behaves quite differently. I once saw him hunting after insects among the plants in a garden. The owner of the garden, catching him at his work, chastised him with a good blow of his stick. Insulted in the highest degree, the Crane drew himself up to his full height, and springing close to the man began screaming, as much as to say, 'What do you mean by this?' As he only received a further thrashing by way of answer, he pocketed his indignation for the moment, and retired from the field. With injured pride the bird walked to a bridge over a ditch, some distance from the garden, over which his adversary had to pass on his return home. As soon as the latter appeared walking towards him, the bird advanced from a distance with haughty strides, and loud cries, declaring war. He rushed to meet the enemy on the bridge, and sought to dispute the passage, and the man was obliged fairly to cut his way past, in doing which he received severe punishment from the bird's beak; the Crane following him right up to the door of his house. Since the event the bird has remained at open feud with his insulter, and never allows him to pass by without interruption."

These are sketches from, so to speak, the mental life of a bird, which have had an acute observer for their describer. They speak for themselves, and need no explanation. I, for my part, have not wished to give them in an abridged form, and have, therefore, been obliged to relate in detail. They will, however, I fancy, convince the greatest unbeliever that birds are possessed of reason; and I will furnish my converts with another amusing anecdote. It relates to a talking-bird, and goes to prove that reason alone renders such skill possible. The relater is,* or rather was, a warm friend of my father's, an excellent observer of birds, and for many years a collaborateur with my father in several of his works. He writes as follows:—

"The most wonderful creature I have seen for many years is a Gray Parrot (*Psittacus erythacus*) belonging to a clergyman of this town (Salzburg). The talking, and still more, if I may be allowed the expression, the reason and power of discrimination in this bird, border almost on the marvellous. I have known it for upwards of four years, but it is only in this year (1835) that I have had a favourable opportunity of observing it more narrowly than before. I took several people to see it, and one and all were agreed that it was a marvellous creature, and that they had never seen such a bird before, nor had they believed it possible such a one could be found. Although

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[*] Count Courcy Droitaumont, Imp. Master of the Robes, at Vienna.

I often listened to the bird for hours together, yet I could not understand everything it said in a single visit, for it talked a great deal too much, and, if in the humour, was not silent a moment during the whole afternoon.

"This bird is now six and a half or seven and a half years old: it talks, sings, and whistles like a man, and imitates the human voice so accurately, that if a person hears it in the next room the bird causes the most singular and comical misunderstanding; inasmuch as it always gives the true tone and correct expression of greeting, threatening, fear, tenderness, &c.: it is excessively entertaining to listen to it, for one would think that several people were talking together. One is all the more readily deceived by its way of answering any question addressed to it in the most apposite manner; it will often vary its answers in this way, when addressed by anyone. It also shows great talent as an *improvisatore*, and often says things which no one can remember ever to have taught it; this is owing to some passing remark made in its presence, which it has caught, and practises when alone. One morning its owner received a visit from a brewer, and addressed his visitor thus:—'Good-morning, Mr. brewer,' &c.; whereupon the bird immediately calls out: 'Good-morning, Mr. brewer; your humble servant, Mr. brewer.' And this it repeated several times, until it uttered the sentence without a mistake. Upon this achievement it immediately signified its pleasure by a loud cry of triumph; and this was its usual mode of signifying its success. A native of the place once said to it, 'Polly is a witch' (a local term for dolt); the bird immediately answered, 'I am not a witch.' This can naturally be only ascribed to its memory and power of comprehension, for it is customary in Salzburg to call a person a witch by way of abuse, in preference to any other epithet, such as dolt or idiot. To this the person thus addressed naturally answers in the phrase used by the Parrot; and, doubtless, the bird had heard this phrase, and pondered over it. I have also heard it say to its master, on his repeating to it in a loud tone some words which it had not pronounced properly: 'Don't holloa so; I heard you.' This answer was, doubtless, not the production of its own imagination, yet how admirably had it stored the words in its memory, and reproduced them on the right occasion. In like manner it would call out at the right time in the morning when breakfast was laid in an adjoining room: 'Cocoa, bread; cocoa, bread; thou shalt have some soon;' until he received his share. When dinner was being laid in one or other of the rooms it would immediately call out: 'Let us go to dinner; come, go to dinner.' On hearing the big bell of the cathedral, whose notes summoned his master to the choir, it would call out: 'I'm off; God bless you.' On all other occasions it would call out good-humouredly: 'God be with *thee*.' If, however, strangers were present, it would say at their departure:* 'God be with *you*.' This proves how accurately it watched everything that took place in the house. If anyone knocked at the door, it would call out in a tone not to be distinguished from a man's voice: 'Come in.' On the entrance of the stranger it would say: 'Your humble servant awaits your orders; it gives me great pleasure that I have the honour,' &c. Sometimes it would bite in two, or upset, something in its cage; upon which it would say: 'No; don't bite; keep quiet. What hast thou done now? thou rascal, thou scamp; wait awhile, and I'll give thee a thrashing.' There was a little bell hanging up in its cage, which it would often ring, and then it would call out: 'Who's that ringing?' . . . 'Polly's ringing.' If its master asked, 'What is the dog saying?' it would immediately bark; should he say, 'Whistle to the dog,' it would whistle to the animal exactly in the same way as we should, and then call out: 'Ah! the dog is there; it's a pretty dog; what a pretty dog it is.' Just in the same way if told to shoot, it would say, 'bang!' forthwith; he made the sound 'puff.' He also had his own words of command, such as 'halt,' 'dress,' 'attention,' 'make ready,' 'present,' 'fire,—bang!' '*Bravo; bravissimo!*' It would, however, often omit the word 'fire;' when it would never exclaim, 'Bravo, bravissimo!' as though conscious of its mistake. Not long ago it was ill for twelve days; and all the time it was unable to utter a sound. During the first days of its convalescence, however, it was extremely difficult for it to say 'bang.' It would, on such occasions, always make a pause after the word 'fire,' before it began again to repeat, 'halt,' 'dress,' 'attention,' &c. It would often whistle as though for somebody, and then call out: 'Mr. neighbour, stop a bit!' It imitates the Cuckoo and the Cockatoo to perfection. It says: 'God save the Emperor; long live the Emperor;' 'Where dost thou come from;' 'Beg pardon, your grace; I thought you were a bird;' 'Give me a kiss, a dainty kiss,' when it would make the sound with its beak. At another time it would say: 'Prayers; let us go to prayers.' 'Let's go to the window,' a favourite place of his. 'Reverend sir, give me an almond, please.' 'Captain, my compliments to you, captain.' 'Churl, rascal, clod-hopper, poacher, move on. Do you mean to go, or not? Wait, you rascal, you dolt, you execrable wretch, you—' 'Bravo, Polly! good, Polly.' 'What, pull my hair; pull *my* hair; oh, oh;' as if it were being roughly treated: 'pull *my* hair; wait you rascal.' 'Ah! ah! such is life! and such a life.' It laughs just like a man. After its illness it would exclaim in a melancholy tone: 'Ah, Polly is sick; poor Polly's sick. Dear, dear; and this is poor Poll.'

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* Thus recognizing the distinction, between a friend and an acquaintance, by the usual German phraseology.

"This bird's master had a Quail; and the first time the Parrot heard it call, it turned towards it and shouted: 'Bravo, Polly! bravo.' It would give the notes of a chord, and whistle the scale in tune, both up and down, clearly and with ease, though occasionally half a tone flat or sharp. It would also whistle one or two airs in strong and wonderfully pure tones; then it would sing, in a low beautiful voice: 'Oh, poor Polly;' and equally well the following song: 'O Pitzigi, O Pitzigi, blas' anstatt meiner Fagott,' &c. To teach it to sing, short phrases were selected, which it could clearly speak; for instance: 'Is the pretty Poll there?' 'Is the lovely Polly there? yes, yes.' It could also repeat a number of other short phrases, such as: 'Good-night;' 'get up;' 'Polly must leave the room;' and the like. All this goes to show its great powers of comprehension, and its wonderful faculty of understanding and rendering distinctly the meaning of all it hears said.

"As this bird is excessively tame, and is allowed to run all about the house, one need only say to it: 'Polly, go into your house; we're going to the window.' When it immediately answers: 'Go home, go home; come on;' and, forthwith, it climbs the ladder, and goes to its cage."

After narrating such facts as these, it is unnecessary to dwell further on the subject of reason in birds. My readers will now, one and all, be better able to appreciate the words spoken by the chamois hunter in Schiller's 'William Tell:'—

> "You're joking now. A beast devoid of reason,
> That's easy said. But beasts have reason, too;
> And that we know . . . . . ."

CHAPTER III.

DISPOSITION.

> "Ihm gaben die Götter das reine Gemüth
> Wo die Welt sich, die ewige, spiegelt."
>
> SCHILLER.

WHOEVER has listened to a bird's song with any degree of intelligence, has assuredly been able to read the little creature's heart through its spirit-stirring melody. Indeed, the word song suffices in itself to prove the joyousness and blithesome disposition of this happy being. But I must here take the opportunity to relate much that is so charming as to forbid silence. Doubtless, song is the very flower of feeling in its prime; it may be objected that it is only the awakening to life of the heart's love in the opposite sex, and can only, in this respect, be regarded as an amatory instinct. I do not feel disposed to contradict this; although I have somewhat to add to the objection, for the song of the bird, as the expert well knows, is the echo and reflection of the carols of spring; a bird singing is its triumphant harbinger. After the cheering sun is gone, the song is no longer heard. Even in the heyday of love, when his warm rays beam forth, the glance and glitter of the spring touch the bird to its heart's core, and it pours forth its soul in rapturous songs of praise to that life-giving power. Love remains the same, whether in the sweltering heat of noon, or in the cooler hours of eventide; but the hues of the rosy dawn, and the tints of glowing eve, are mirrored in the minstrel's breast; and thus its song rings out in tones so clear and well sustained. What wealth of feeling is expressed by song, I need not attempt to tell my readers.

But, besides song, we have other tokens to prove that birds are richly endowed with a kindly disposition: their love to their young, and affection for their mates; their pity for the weaker of their class or species; and their gratitude for benefits received. Of these several traits, I will relate a few of the many anecdotes which have been collected.

I shall have to speak of their love for, and fidelity to, their mates, further on; but here give only a cursory glance on the subject. "German poets," says Schomberg, "not aware of the tender love existing between a pair of Love Birds, have chosen Doves as the type of pastoral love; but how far does the tenderness of these fall short of the love shown by the former! In them we find the most perfect unity of purpose and harmony of action combined: if one eats, the other eats also; if one bathes, the other accompanies it; if the male cries, forthwith the female chimes in; is one ill, the other feeds it. No matter how many of these little birds may be assembled on a tree, each one keeps with its mate; and they never separate." It is a well-known fact that these lovely creatures rarely survive the death of their companion. They pine away visibly when cruel fate dissolves the marriage bond; rarely touch food again; scarce utter a sound; or, if they do, its tone is most piteous; and in a few days they follow the loved one gone before. The same thing has been often remarked amongst all gregarious birds, and sometimes, also, in others. We even know an example, where a female Owl pined to death after the demise of her mate and companion of many seasons. Clinging affection, like this, is a beautiful picture of life-long attachment. Here, at least, we find no trace of selfishness; the one finds its happiness only where the other takes its part; each lives for the other.

No less noble is a bird's love for its young; no mother could be more tender or devoted to her children. To think that this child of light, whose very life is light, will bury itself for weeks together away from that light, in order to brood o'er its young! Love engenders that mystic influence which awakens life in the sleeping germ; love teaches to forget all, to forego anything and everything, so as to accomplish this noble task. We once killed a Magpie that was breeding in our garden. We had shot at her several days before, and as we thought without effect, but it was not so; the charge had penetrated the dense mass of nest, and had lodged deep in the mother's breast: the blood streaming from the wound by no means chilled the maternal love; she, though mortally wounded, had forgotten both herself and her pain in her love for her nestlings.

Such sublime affection is not always confined to their own offspring alone; comprehensive, it extends and embraces others of even a different species. Nay, she vouchsafes her love to little strangers when her pity is excited. The stronger support, guide, and nourish the weak, while the healthy take care of the sick; the elder brothers and sisters help to bring up the younger. Some species are left in their childhood to the care of utter strangers,—a care which is readily accorded them. Out of many instances observed I will only narrate one or two which bear upon the question of such fostering care of orphan young.

The history of our Cuckoo and its youth is probably well known to every one. This wild rapacious bird lays its eggs in the nests of other birds, over a large area, leaving them to the care of strange mothers, mostly our lesser singing birds, which both hatch and rear them. Each visit of the Cuckoo, though destructive to the brood of the foster-mother, in no way detracts from the care and love with which they treat their foster-child, whose outrageous appetite they gratify by every means in their power. All members of the Cuckoo's family are brought up as foundlings, and many touching examples are known of foster-mother love. To give an instance:—A Water Wagtail had made her nest in a hollow tree, the opening of which, though large enough to admit herself, was not so for the Cuckoo; in spite of this the female of the latter had laid her egg in the nest. In due process of time the egg was hatched, and the ungrateful foster-son, as soon as he had disposed of the Water Wagtail's family, grew so large that he filled the entire nest, and when fit to fly was unable to get out of the hole. On this account the warm-hearted little bird that had reared the young Cuckoo continued to feed it during the whole summer, and far into the autumn; till, at length, it drew the attention of the ornithologist Thienemann. He relates this as a fact, and states positively that, at the time he discovered the prisoner and its devoted nurse, most of the other Water Wagtails had migrated; thus pity had caused the foster-mother to forego her usual habits, and forsake her kindred! In the case of the Cuckoo, the foster-parent, doubtless, undertakes this extra care under the influence of compassion:

alone and of its own free will it willingly accepts this troublesome responsibility. My father observed a nest of young Titmice (*Parus major*), probably orphans, under the care of a Marsh Tit, which latter not only fed, but guided and warned them when danger was near, as though they were her own. These orphans, moreover, obeyed their foster-mother with the greatest readiness and exactitude; they perfectly understood her call-notes and warning cry, though strange to them, and would seek shelter near her of their own accord. A forester with whom we are well acquainted once saw a Water Wagtail carry food to some young Redstarts. I myself have seen the young of the Reed Warbler fed by a Sedge Warbler. Naumann tells us that Moorhens take the most jealous care of their young: they keep them always in sight, giving warning of every impending danger. My father remarked, after repeated experiments, that captive Warblers would unhesitatingly rear young ones if placed in the same cage with them, and now and then the young of the first brood will rear those of the second in the wild state! Thus they take a portion of the burden of bringing up from off the shoulders of the parents, and, though barely independent themselves, take care of the welfare of those still more helpless. A young Eared Owl brought up nestlings of the same species, when its parents had been killed; a fledgling Kingfisher undertook the rearing of two half-grown young ones; and an old Hen often plays the part of mother to orphan Chickens. Ducklings confided to the care of Hens may also be mentioned here, and at the same time I will give a very remarkable anecdote relating to a case of the above. A solitary Goose used to take charge of some Ducklings when the Hen brought them to the water—where she could not follow them: the former even allowed the anxious foster-mother to get on her back and thus hazard a voyage on an element fraught with perils to herself, in order that she might be near the children of her adoption.

All the above anecdotes refer only to the care exercised towards young birds by their elders, and bear no reference whatever to the watching and assistance rendered by full-grown birds to one another in times of sickness and distress. I can, however, furnish proofs of the latter. Every sportsman is well aware that a covey of Partridges will return to their wounded companions, and regulate their movements so as to suit the pace of their less fortunate friends. Rooks immediately come to the relief of the sick and wounded of their own species; an Alpine Crow, whose wing I had broken by a shot, was fed by its relations. The male of a migrating pair remained behind to tend its sick partner, in spite of the coldness of the climate. Nay, more, pity will even subdue enmity. A zealous bird-fancier, who lived in our village, possessed two male Robins which were excessively jealous, and constantly passed their time in pecking and fighting each other. During one of their chases round the room, one had the misfortune to break a leg; the conduct of the other changed immediately; he put all enmity aside, approached the sufferer in the most kindly manner possible, hopped around it all the time uttering cries of pity, and finally ended by bringing it food, even his tit-bits, meal-worms, etc., which he would no longer keep for himself, but brought them all to his sick comrade: the latter accepted this care and allowed itself to be tended by its former rival. It recovered perfectly, and gratitude took such deep root in its heart that it was never known again to quarrel with its benefactor.

For a long time this anecdote was a solitary example, but a short time since we received a *pendant* to the same from the pen of a very old friend of ours, Herr Von Pietruvsky, of Galatia. He possessed two tame Linnets, both males: these were always sworn enemies and were continually quarrelling: after some time the stronger of the two was attacked with cramp in the legs, when the other immediately forgot the old grudge and fed its enemy and rival from its own crop. The same observer noticed a female mule, a cross between a Canary and Goldfinch, which fed its mother during a whole winter, after the latter had become quite exhausted by the arduous duties of the breeding-season. In the following winter Pietruvsky placed the two in a large cage, together with sixteen other birds, when the daughter again resumed her work of love, and nourished the parent bird. Freiherr von Seyffertitz kept a Golden Eagle in a cage, which they fed with suitable animals, both live and dead. Once the keeper gave the Eagle a Buzzard, which he had just caught: the Eagle looked upon the victim with a murderous glance, ruffled its plumage, drew itself proudly together, and with a scream appeared to entertain the design of rushing upon its feeble adversary. The eye of the Buzzard had watched in mortal terror these preparations for its destruction, and looking imploringly up at the powerful foe before it, the bird uttered a loud and agonizing cry. The Eagle remained for some time motionless; suddenly, however, pity conquered thirst for blood; to be brief, it not only allowed the Buzzard to live, but soon after became its fast friend and willingly shared with it both meat and drink. It so happened one day, after these two birds had lived together for some time very happily, that the Buzzard contrived by some means to effect its escape;

its companion took this so to heart that it refused its food, and only recovered its spirits on the reappearance of the Buzzard, which, unhappily for itself, had the misfortune to be recaptured.

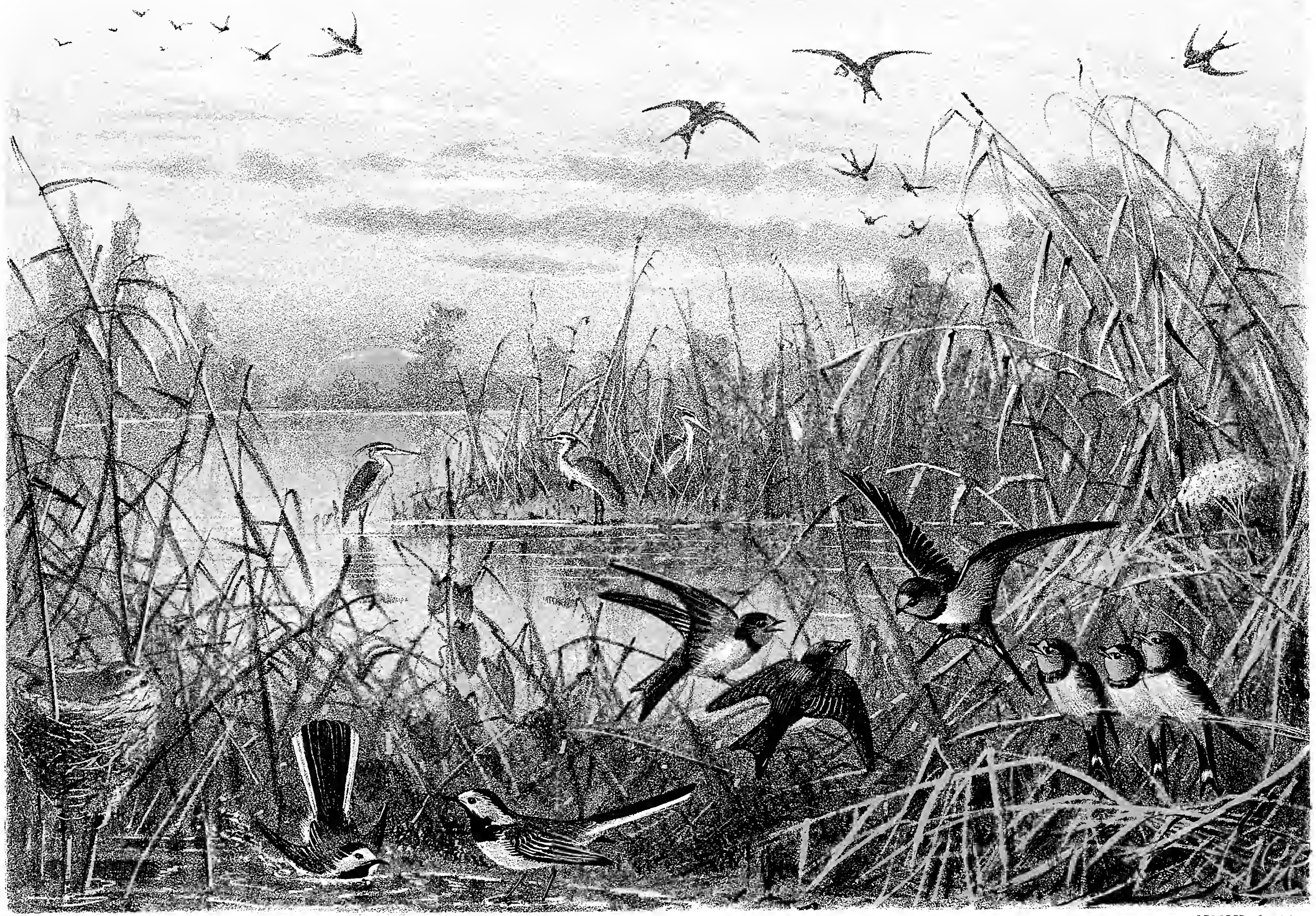
Certainly, from all sides anecdotes similar to those just related might be collected, giving proofs of the temper and disposition of birds under similar circumstances. We cannot help remarking, amongst all birds which are kept in captivity, their proneness to foster or nurse others, and the readiness with which they show their affection. A striking example of mutual tenderness occurred between two members of my menagerie in Africa,—a monkey and a Hornbill,—which lasted until the death of the bird. The monkey was chained and the bird free, yet the latter would often go of its own accord and seek the former, and allow it to treat it almost roughly, raise its feathers one by one, and the like, as monkeys are wont to do when freeing their friends from disagreeable lodgers. The Hornbill, in spite of everything, preserved its affection for its friend. Between men and birds the most touching instances of attachment have taken place in cases where the former have understood how to treat and appreciate the latter, which are among the most grateful creatures of creation. They are sad and thoughtful when their master is absent, because they do not regard him in the light of a ruler, but rather as a friend to whom gratitude is due. An old gentleman had a Bullfinch, which clung to him with the greatest tenderness and devotion. Once when the master was obliged to go a journey the bird was sad and silent; on its friend's return its joy was boundless, it fluttered with its wings and nodded a greeting as it had been taught to do, sung its master's pet air, flew up and down in its cage, became all at once silent and

—fell dead from the perch—poor little creature! Its joy at its friend's return had been too much for it! Of the Bullfinch, so abused for its stupidity, I had the following anecdote related to me from a reliable source—quite the converse of the latter, it may be considered corroborative of it. A Bullfinch belonging to a young lady was so tame that it was allowed to fly about the room, feed out of her hand, and return to its cage of its own accord. One afternoon its mistress was prevented by pressing business from taking notice of the bird, in spite of its blandishments: the lady was at last so disturbed by the bird flying hither and thither that she was obliged to shut it up in its cage, and, as the bird appeared so miserable, covered it over with a cloth. The Bullfinch begged and prayed in touching tones for freedom, which, however, was not accorded to it; till at last it became perfectly still, ruffled its feathers and died of rage, as the former did of joy!

Many other similar anecdotes could be told, if necessary, but the disposition of birds shows itself to us daily and in a hundred different ways, and yet all our observation can only assist us in comprehending but a trifling portion of the spiritual life of these bright happy children of the air! What is passing within that little heart! Would we were children again, for then we could joyously and unhesitatingly believe the following stanza:—

> " O Du Kindermund, o Du Kindermund,
> Unbewusster Weisheit froh,
> Vogelsprachekund, Vogelsprachekund,
> Wie Salomo."

But, unfortunately, we are only in a position to surmise where we fancy we know, and to guess where we might possess perfect knowledge! Still the little that we do know is fully sufficient to afford us convincing proofs that, in the bird, we see before us a highly intellectual being, the more so as we are drawn towards it by friendship and inclination, through the beauty of its form.



J.G.Keulemans lith.

M&N Hanhart imp

A SUMMER MORNING.

PART III.

HOME AND FUNCTIONS.

PART III.—HOME AND FUNCTIONS.

CHAPTER I.

GENERAL DISTRIBUTION.

> "Ringsum unterm Himmelszelt,
> Das Entzücken edler Jäger,
> Nutzen bringend aller Welt
> Sind die schönen Flügelträger.
> Todter Wüsten üder Graus
> Und des rauhsten Landes Bogen
> Wird von ihrer Schar durchflogen."
>
> Welcker.

Wherever that restless longing for the distant and the strange may lead us, we are ever greeted and accompanied by the feathered throng. There is not a single spot upon our ever-moving globe, where life is possible, that is without these bright and happy creatures; everywhere they find some suitable locality in which to take up their abode. The very sight of them brings vigour and joy to the heart, for it is only when we lose their company that we begin to feel that sensation of utter desolation and loneliness which the traveller experiences upon entering a region where all trace of animal life has apparently vanished; and for this reason, also, the eye, often unconsciously, seeks the airy forms of birds. Their lives help to invigorate our own.

The untrammelled spirit seeks eagerly to burst the fetters which bind men to earth. With timid footsteps man climbs the still regions of snow to obtain a closer glimpse of the jewelled coronet of some mighty mountain-range; the green fields have long since disappeared, and the cultivated land lies far below the footsteps of the solitary wanderer, floating in a hazy mist of blue. He has taken leave of the habitations of man, and imagines himself to be alone when, far above him, he hears the shrill cry of the Lämmergeir or the Condor; his is not the only heart that beats warmly amid this chilling cold. In the icy deserts of the North man wanders, until he thinks himself abandoned by all living creatures here below; when all of a sudden a Ptarmigan whirrs across his path, infusing new energy into his failing steps. The traveller who has lost his way on the sandy seas of Africa finds the little Desert Lark, far from all human habitation, on his dubious and uncertain path, and feels almost comforted by the sight of his small solitary companion. The daring buffalo-hunter of America leaves the beaten track, and rides across the waving prairies; no sign of humanity meets his keen glance, yet the little Prairie Owl peeps out from the entrance of his under-ground habitation, and, with comic bobs and bows, seems to say: "Speak, child of man! what dost thou here?" The bird was here long before he was. The seaman ploughs the broad ocean with his craft; one boundless expanse of sky and water is all that meets his glance; no ship, no boat is to be seen; nought but a school of porpoises diving and rolling in their merry gambols;—yes, there sweeps before him that mighty flyer,—which knows neither distance nor solitude, regardless alike of storm or calm,—the Albatross! Birds live and dwell on the ocean, and they greet us with their hundred different notes in the primæval forests, lying under the scorching sun of the Tropics. Thousands of birds live on the most barren islands at the Poles, aye, even on those which have never been scanned by human eye. In the green fields of cultivated districts we can scarce take a step without meeting with some of these citizens of the world, or without hearing the voices of these creatures of which we are so fond: north, south, east, and west; on all sides birds are to be found. Long before man appeared they were settled inhabitants of this earthly sphere.

The extraordinarily extensive distribution of the feathered creation reveals to us an indescribable diversity in development, arising from a common form; each creature being exclusively constructed, so as to meet the requirements of the existence peculiar to it. Research teaches us to recognize, in this fact, an immutable law of Nature: uncertainty disappears, and certainty lies before us. Thus, it becomes possible for us to determine, through comparison with those animals with which we are already acquainted, the homes or abodes of species yet unknown to us, or by means of an exact knowledge of its locality to determine in prospective the form and colour of a species. Certain characteristics, which are to be found among all animals in one and the same district, may, after examination, be accepted as distinctive.

The home of the bird is twofold, land and water. The slightest observation will at once show us the difference of form existing between birds occupying either. They always possess a certain stamp, which bears an evident relation to one or the other. Inasmuch as the characteristics of the land are more varied than those of the water, so it is that land birds vary more in form and species than aquatic birds: these last, again, are more numerous as individuals of a single species than the former; for it rarely happens that any land species is to be met with in such countless numbers as are some of those which inhabit the water. Unite the two dominions of earth and water, and then we discover a concourse of species as well as of individuals. Thus all lakes and swamps, especially those situated in warm climates, are exceedingly rich in birds belonging to many different species.

In support of this view of the case, we may regard the land, taken in conjunction, in some measure, with the equator, as the generator of many species; and water in the Polar Regions may, on the other hand, be regarded as the maintainer and animator of multitudes of one species—that is to say, within certain bounds: for on heat becoming fervid it fails to generate, and burns instead; also the higher degrees of cold numb, instead of preserving life. On land these conditions are to be met with in a comparatively circumscribed limit, when we draw a parallel between the forest and the field, the mountains and the plains. On the waters this is much more difficult, or perhaps impracticable: to fix limits to the raging flood cannot well be accomplished. For this reason, it is impossible to assign a circle of distribution with reference to an aquatic species with the same certainty and facility as is done in regard to land species. Although the bird, gifted as it is with the means of flight, is of all animals the one best adapted for travelling, there exist circumstances which confine it to certain localities, with which, in our minds, it is always more or less associated.

The different conditions under which certain birds live are due to the characteristics of the locality in which they are found; and as we must look upon every animal as the result of the climate and soil of its native home, be it large or small, settled or unsettled, it becomes evident to us that an accurate observer of a bird whose geographical range is extensive will find differences in the conditions of existence within this range which might be easily regarded by an ordinary observer as the result of accident, or possibly be over-looked altogether. Thus, my father, a man whose whole life had been devoted to the most careful observation of birds and their habits, could at once distinguish, among other things, the Pied Woodpecker of the fir forest from one of another locality. I have been so often convinced of the accuracy of his habits of observation, when I have questioned the possibility of a suitable basis for similar assertions, that I can vouch for the truth of them.

The land bird is bound to its home by powerful bonds which, for the most part, are invisible to our dull vision; with some species these limits may perhaps embrace an area less than the hundredth part of a mile. A large garden and a few trees suffice to form the stage upon which a pair of Tree Creepers or Tomtits will act their share of life's work. It is different on the water: one wave is like another, their temperature is almost the same, their charms are equal, and the bird is cradled from one to the other. Unless there is something definite or fixed which binds the bird to the spot, it may carelessly and unconsciously drift hundreds of miles on the broad ocean. In this way we may account for the wide distribution of many species of aquatic birds.

There are limits, however, to the apparently boundless ocean as well as to the land. From close observation of bird-life, even within a circumscribed area, we are struck by the diversity of it, especially with regard to distribution. The greater or less dependence of bird-life upon that portion of the plant-world which is productive of fruits, seeds and insects, is evident. If we extend the sphere of observation, an undoubted regularity in that distribution soon becomes apparent; and this is intimately connected with the nature of the soil and the climate. The resemblance between birds and certain districts is striking; we remark, even, that the conformity of animals with the localities which they inhabit is not confined to level circuits alone, but is analogously manifested in high-land districts.

Thus, if we would observe the gradual changes of certain species, it is almost immaterial whether one wanders from Germany northwards, or climbs from a valley to the snows of an alpine range. On both roads we leave behind us, by degrees, oak, beech, pine, and birch, until the plant-world is only represented by a few mosses and other low forms, and at last vanishes almost entirely. In both cases we alike lose sight of one bird after another, though, here and there, a new species crops up, which, if not identical with, is one which corresponds to, and, as it were, replaces it. Little Owls, Pipits, Thrushes, Blackbirds, Wagtails, Redstarts, Robins, Warblers, and others, are found at higher elevations and latitudes respectively, both in corresponding degrees; till in the one case, the Snow Bunting (*Emberiza nivalis*), and in the other, the Snow Finch (*Fringilla—Montifringilla—nivalis*), together with the Ptarmigan, common to both, are the sole representatives of bird-life on land.

In wandering through more extended regions, we recognize a gradual disappearance of the different species, though we see these replaced again by other forms. There are very few birds, indeed, which are to be met with distributed over the entire globe, and those that we do find are mostly sea-fowl. Usually a special zone is inhabited by a number of species, which gradually become rarer as we approach the confines of that zone, until at last they disappear altogether. The lesser seas and lakes do not interfere with the regular changes occurring among the land-birds inhabiting such zones; and the same may be said of tracts of land equally insignificant in extent. Where, however, we meet with expanses of territory destitute of water, or even broad oceanic tracts, a deviation from these regular changes takes place. Those who have sailed across the ocean, or wandered over the pathless plains of the Sahara or through the American steppes, find, at the end of their journey, that the whole animal creation before them has become changed as if by magic, and the conditions of existence entirely altered.

As a rule, the zone of distribution extends further east and west, than from north to south. In the former direction, a difference in this respect may be observed covering hundreds of miles; while, in the latter, scarcely any change whatever is to be remarked. But, in following out this hypothesis, one must carefully remember that the resemblance between the birds of America and the Old World, in both hemispheres, invariably decreases the further we go south in either country; and, indeed, a corresponding area of demarcation between these continents holds good. Yet, nevertheless, we find, in spite of the wide expanse of water which separates the two hemispheres, some species representative of each other, alike in the New as in the Old World; and these resemble one another so closely that the most careful observation is necessary to determine the difference between them.

Contrary to expectation the relative distribution of a bird does not always bear the same ratio to the power it possesses, in a greater or less degree, of changing its place of abode. We more often find that the best flyers are limited, comparatively, to a small portion of the earth; at the same time we may remark that they are, under similarly local conditions, replaced by forms closely allied to them. The first may be attributed to the capacity of a bird to undergo long journeys, because this renders it possible for it to return to its original dwelling-place, under any circumstances, after quitting it, at pleasure; its distribution, therefore, is rather an act of free-will than the result of any fixed law; yet a law seems manifest in the fact that, under similar conditions, a representative of a certain species will inevitably arise.

Thus, the zone of distribution occupied by the Eagle, the Falcon, the Swift, and the Swallow, is, comparatively speaking, limited, and that of the Lämmergeir is singularly so; but we find in all quarters of the globe representatives of the former, and in all the high-lands of the Old World birds remarkably similar to the latter, while in the New World we have the Condor, which is, at any rate, allied to them. The first-named may be found in countries very remote from their native home. This we do not consider as the result of distribution, but rather look upon them as erratic travellers, or, it may be, cast-aways; just as we regard all migratory birds as strangers, when they appear for the time being, but without the intention of breeding. Notwithstanding this, there are emigrations among birds, which lead to a fixed colonization, in what are to them foreign lands. When I say, "foreign lands," I mean that certain districts did not possess the necessary conditions of life for certain birds, rather than that these countries were unknown to suitable species before they settled there. As an example of such colonization I may mention the common Sparrow, which came first to Siberia only after the introduction of cereals; in like manner, it probably emigrated to East Soudan with the first introduction of wheat. It cannot, apparently, live in any other than an arable country; for in many forest-villages it does not exist. In the eastern hemisphere, however, it is found in all places where cereals are cultivated, and has become acclimatised in both Australia and America. Thus, its geographical distribution is exceptionably extended, and will probably become more so, for this bird has almost merged into a domestic animal, and will, probably, follow man over the whole earth.

We know of similar cases of colonization among birds in Scotland; the Partridge is supposed to have been unknown there previous to the introduction of rye;* the Crested Lark only settled in Westphalia after the formation of the high-roads; and, in Holland, the Purple Sandpiper (*Tringa maritima*) first appeared as a permanent resident with the introduction of stone dykes.† In Murcia, in Spain, a few years ago, a single pair of Jackdaws made their appearance, birds which, hitherto, were unknown in that neighbourhood; they brought up five young ones: these again paired, and soon increased to a considerable flock, much to the annoyance of the farmers, whose corn they devoured.

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* Query oats or barley.—*W. J.*

† The Purple Sandpiper does not breed in Holland, and therefore cannot be considered as "bleibend" or a permanent resident: the author here probably means, under the term "Meerstrandläufer," the whole family of Tringæ and Sandpipers; but why they should have deferred residing permanently in Holland previous to the introduction of stone dykes is not easily to be understood, unless the explanation be that, by reason of repeated floods, the places suitable for breeding were rendered untenable. I am indebted to Mr. H. E. Dresser for the substance of this note.—*W. J.*

On the other side, many birds disappear from certain districts without apparently any reason. The neighbourhood presents the same appearance after their departure, as it had during the time they used to be found there, and yet not a single pair remains in the abandoned region. While speaking of this phenomenon, it may be easily understood, from the circumstances attending the fact, that man can banish certain birds from his neighbourhood by destroying or disturbing their breeding-places: this, of course, bears no reference to the emigration of birds of their own free will. It is an undoubted fact that the Ibis was common in Egypt thousands of years ago. Many thousands of Ibis-mummies were deposited in the pyramid of Sakahra, which was erected in their honour: yet in these days such a thing as an Ibis is not to be found there, they have all withdrawn to the Soudan or the Nile; for what reason no one knows. In the neighbourhood of my birth-place, black and gray Woodpeckers, Ravens, Magpies, Hoopoes, Whinchats, &c., all disappeared, although they could, even at the present day, sustain life there. From this we may gather that the zone of distribution of certain species is in no wise the same at all times.

On sea and ocean these conditions assume another character; here distance vanishes, and with it, more or less, the causes which bind birds to a locality; the ever-moving water itself naturally extends distribution, and this explains, in a great measure, why we find, upon all the oceans of the globe, the same species of aquatic birds, or, at all events, very closely allied forms. In general, one may state that the zone of distribution of certain species is co-extensive with one or the other of the earth's zones, the great similarity of birds inhabiting the districts of two corresponding zones being unmistakable. The Great Auk (*Alca impennis*) of the North Pole, and the Penguin, inhabiting the islands of the south Polar seas, are proofs of this; differing, as they do, one from the other, they cannot be looked upon as other than closely allied.

On the other hand, the sea gives no examples of limited distribution, except only on small islands, where a singular instance, of a very limited field of distribution, is to be met with: in the Galapagos group situated under the equator, 500 nautical miles west of America, Darwin discovered six-and-twenty different species of birds, of which only one had ever been observed elsewhere.

In a similar manner, also, Australia and Madagascar produce species peculiar to themselves. Many islands, situated on the glassy bosom of the ocean, possess birds which are not to be met with upon other islands only a few miles off. Such decided lines of demarcation are not found on the main land. The more perfectly-developed sea-birds form quite a contrast to the isolated birds of these islands. Among the mighty flyers, namely, the Giant Petrel (*Procellaria gigantea*) and Albatross have no distinct circle of distribution, though originally emanating from—and breeding in—the torrid zone. They wander over all the seas of the earth, and cover such enormous distances in a day's flight that no distinct limits can be assigned to their habitats.

The total number of species of birds, hitherto discovered, amounts to nearly 8000:* of these, the Parrot family numbers over 300; the Raptores, about 400; and the Passeres, which may be divided into several families, number over 5000; Pigeons, about 300; Gallinaceous birds, over 300: the Ostrich family, 10; Waders, about 600; and the Swimming-birds, such as Ducks, Divers, &c., also about 600 species. These species are distributed over the earth's surface somewhat in the following manner:—In Europe alone Parrots are not represented. Birds of prey are cosmopolites, that is to say their different families have representatives in all quarters of the globe; with the exception of the Secretary bird (*Gypogeranus serpentarius*) of Africa and the Lämmergeir, which only inhabit the Old World. The Passeres are universally distributed; every quarter of the globe, however, is possessed of special groups. The Pigeons are scattered over the whole earth. The Gallinaceous birds are pretty equally distributed; those of the Old World consist mainly of three principal groups, containing about seventy species; in the New, are five families, also containing about seventy species; one family has representatives in both hemispheres. The Ostrich is wholly unrepresented in Europe. Among the Waders we find many families which are spread all over the earth; yet every quarter of the globe possesses its own peculiar types. The Swimming-birds (*Natatores*) are almost all cosmopolitan, as the following: Swans, Geese, Ducks, Waterhens, Mergansers, Pelicans, Frigate-birds, Terns, Gulls, Albatrosses, Puffins, Petrels, and Grebes. The Auks, Divers, Guillemots, and Penguins, are confined to the northern and southern Polar seas; while the Scissorbills—Terns and Tropic-birds, are not found out of the tropics; the Darters, as well as Birds of Paradise, only inhabit the countries situated in the torrid zone.

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* This estimate is certainly under the mark. The latest computation makes the number of species known 11,162 (*vide* Gray's 'Hand-list of Birds'); and, allowing for every contingency, the number of known birds must be about 10,000.—*W. J.*

Owing to the extraordinary capabilities of distribution possessed by birds, and the continuous discovery of new species, the number of these indigenous to each quarter of the globe has, as yet, not been determined. This can also be said even of Europe, in spite of the researches which have been made in all directions, birds occurring only in solitary instances in certain localities having been by common consent excluded from the list of that particular Fauna; for this reason: the catalogue of birds, found in any country favourably situated for feathered life, might easily be raised to double that of the really indigenous species. According to Swainson, the birds of Europe number 338 species; according to Blasius, 490; Degland gives 507; Bonaparte, 530; Schinz, 550; and my father's list greatly exceeds this. Of the 530 species mentioned by Bonaparte, there are 53 species of Raptores; 241 Passeres; 5 Pigeons; 18 species of Gallinaceous birds; 93 species of Waders; and 120 Swimming-birds. Every fresh visitant is added to those already named; and thus the list of species grows larger almost every year. This easily explains why the list of birds to be found in a country is so disproportionate to the number of its mammals. The latter are, so to speak, chained to their home; while the former can leave it whenever they please.

Despite, however, its wonderful adaptation for travel, the bird seems coerced by some hidden and unconquerable impulse, an endless yearning, to return to its early home. This creature, to whom the earth is one universal paradise; roaming from zone to zone; spanning the vast ocean at a flight; able to soar higher and higher, until its native earth vanishes from its sight, veiled by the blue mist beneath; a being which can, at will, explore the dark ravine or tangled forest, hitherto untrod by human foot; capable of passing, in a few days, from realms where winter reigns supreme, through lands of perpetual spring, to regions of eternal summer: and yet, although enabled to behold from above all the wonders of the earth, it finds true happiness in its native land alone. Its very song will tell you this. Home claims all its love.

CHAPTER II.

CHARACTERISTIC BIRDS OF EUROPE, ASIA, AFRICA, AMERICA, AND AUSTRALIA.

> "Wie alles sich zum Ganzen webt,
> Eins in dem Andern wirkt und lebt!"
>
> *Faust* (Goethe).

Whoever travels through the world observant and mindful of all that falls under his notice, or the individual who carefully compares the descriptions of things observed by others, cannot fail to remark that there is an internal and harmonious correspondence between a country and its products; the soil and climate of a certain locality influence the vegetable kingdom, and these three combined produce a like effect upon the animal kingdom. Such correspondence is more observable or striking in the case of some animals than others, and on this account Vogel calls them "the characteristic animals of a country," and truly, as far as I know, he is the first person who has acknowledged their value in that relation.

Each quarter of the globe—indeed almost every greater or lesser district of the earth—is possessed of characteristic animals; in the sea, no less than on land; in forest and field; on mountain and plain. The peculiarities of climate, and of the flora of a country, are reflected in its animals; the actual conformation and composition even of the earth's surface is manifested in them. It is true that, as yet, the cause of this is unknown to us; the result is, however, evident enough. The warmth of colouring displayed in the plumage of tropical birds bears the impress of southern light, and their beauty is but a reflection of the flowers of those regions; equally so the snows of the north seem to cover alike the fur of the mammals and the feathers of the birds; while, in the desert, mammals, birds, lizards, and insects, assume a dress the colour of the sand. As in the North the plant-world clings more closely to earth for the sake of warmth, so in the South, where that want is not felt, they raise their heads heaven-wards, and seek their nourishment from the air. The animal world is governed by a similar rule; and, furthermore, in the South, all the phenomena of Nature are sudden and magic in their character; day and night, night and morning, storm and calm, joy and sadness, heat and cold, drought and flood; all creation, indeed, appears gigantic and fairy-like; while in the North the changes are slower and more equable: thus, in the former, we meet with fantastic animal forms, in part resembling the remains of earlier ages, waifs of a legendary period; while, in the latter, the forms are simpler, and their colours almost uniform; and, whereas, the South has infinite diversity from the richness of its day-life, though, at the same time, wondrous in its night, the North is remarkable in its long night, continuing for months together, followed by a day which is quite as singular in its length. We find in the former an extraordinary number of nocturnal birds, while in the latter the true night- have become day-birds: thus here, as there, the greatest conformity exists between the country and its fauna. Here we can only attempt to give a rough sketch of the characteristic birds of each portion of the globe, with reference to their habitats, which sketch, however, is a sufficient guarantee of the correctness of what we have above stated.

Europe—which, from its birth, has been dominated by the human race, and has, in a great measure, become essentially changed—exhibits a paucity of these typical forms when compared with other portions of the globe; and, of these, scarce one exclusively. Its dependent position makes this easy to be understood. In truth, this small portion of the earth is only a prominent peninsula of Asia, and in such close proximity to two other continents, that to speak of limits, in the sense of the word in which we would now use it, is scarcely possible. Besides which, it lies exactly in that zone where the creative powers of heat and light can accomplish but little: it is no wonder, then, that we miss in Europe the distinctive features of the whole continent. Every family occurring in Europe has a representative in other continents, and not a single genus belongs exclusively to Europe. Notwithstanding this we may look upon certain birds as characteristic of a particular quarter of the globe, although they may be found beyond its borders. The Falcons, which we train to the chase, are characteristic of Europe, although they occur in Northern Asia and North America: they are the most powerful and high couraged, and, therefore, the most noble Falcons of the earth, and the most perfect examples of their race. One would think that the North had produced these birds as typical of its strength and vigour; in the colouring of their plumage, even, we can recognize a resemblance to the Norwegian glacier, and the dark jagged peaks emerging from the ice fields. With these we may rank the Eagle Owl (*Bubo maximus*), king of the night, the mystic hero of goblin story, and the Snowy Owl (*Nyctea* *nivea*), counter-poles of one and the same whole; for the first is a type of night in central Europe, and embodies in form and colour all ideas associated with the word night; the Snowy Owl reminds us of northern nights, when the sun never sets, or is, to a certain extent, replaced by the aurora borealis. We must also include the following among the typical birds of Europe: the modest Wren (*Troglodytes domesticus*) and the pretty Goldcrest (*Regulus ignicapillus*); the one an ever-enlivening inhabitant of our verdant hedges, and the other, with its green dress and fire-coloured head, as the imperishable living blossom of the fir trees of our forest. Europe is rich in sounds and songs, but very deficient in colour; the Nightingale is eminently characteristic of this land. No other quarter of the globe can produce a bird which surpasses, or is even equal to it; but it lacks the splendid colouring of tropical songsters, and the powerful tones of the American Thrushes, and yet is endowed with songs and notes which only find a true accompaniment in the soft rustling of our leafy copses, and a faithful echo in the hearts of civilized men. The Nightingale is identified with us by every breath, likewise by its ways and actions. This bird is, indeed, to be met with in many Asiatic countries, and also in North-western Africa; but still Europe is its true home. The Redbreast, the Blue-throated Warbler, the Garden Warbler, and Redstart, alike bear the impress of our home. This strikes one particularly when meeting with them in foreign lands during their migration. A clump of fir trees is enlivened by the Redbreast, while the Blue-throated Warbler infuses true life to the bramble-covered brook, meandering through green meadows: it is our sunset which decks the breast of the first, while our blue heaven is reflected in the latter. They belong to our woods and plains, as the Redstart does to the slate-roofed cottage, whose ridge it adorns, or as the Warbler belongs to our garden. The South possesses other songsters, and the following Warblers dwell there :—*S. pyrophthalma, S. provincialis, S. melanocephala, S. sarda, S. curruca, S. conspicillata*, and *S. subalpina*—tiny lovely creatures, dwarfs among the melodious throng, as the brushwood of the low forests are dwarfs among trees. These are as typical of Southern Europe as the former are of the North: anybody who has seen one of them will immediately recognize the whole family. Of the remaining singing birds of Europe we may boldly uphold the following as peculiarly ours : — the Garden Warbler (*Hypolais hortensis*), our Mocking-bird, and several of the Sedge Warblers (*Calamodyta*), &c. There is another bird which strikes me as being particularly characteristic of the southern portion of Europe,—I mean the Azure-winged Magpie (*Cyanopica Cookii*), a denizen of the evergreen oak groves, I might say the true child of this tree. Its plumage is in splendid contrast with the foliage of the latter, its whole life is passed in this tree, and it cannot be thought of but in connection with it. The different species of Wood Grouse may also here be mentioned ; the mighty Capercaillie is a splendid creature, which may by the uninitiated be regarded at first sight as foreign to Europe, for its plumage does not correspond in colouring with that usually predominant at home ; it is, however, thoroughly in keeping with the dark tops of the larch and fir. The extremely important law of Nature which seeks to make the colour of an animal coincide with the locality in which it lives does not appear to have been carried out in the case of this powerful bird : it is quite the reverse, however, with the female; she has duties of greater importance to perform than the male; she lays her brown-coloured eggs on the ground, has to hatch them, and then watch over the fortunes of her chicks; she wears a rusty-coloured dress, which may easily be mistaken for a piece of fir-bark, and is never found beyond the limits of the dark forests. The same also holds good in the case of the Blackcock, though not with the other members of the family whose plumage is the same in both sexes. Let us mention yet another of Europe's gallinaceous birds, the Quail, for the Hemipode (*Turnix gibraltaiensis*) of Andalusia is a form foreign to Europe. This bird unmistakeably shows the impress of a temperate land, for almost all the allied forms found in other quarters of the globe are larger or smaller and brighter or simpler in their colouring. The Dipper (*Cinclus aquaticus*) is somewhat less characteristic, although, as the tutelar divinity of the brooks and waterfalls of our highlands, its absence would be as much marked as that of its cousin on *terra firma*. He that has once met with this bird misses it sadly when absent from its home. Our friend the Starling also belongs to the list, and we would even grant a place to the impudent Sparrow, though it is also to be found as a permanent inhabitant of other quarters of the globe, for it only displays its true character when in contact with civilized man. Amongst aquatic birds there are several which we may claim as our own. Two of them are thoroughly characteristic—the Swan and the Eider Duck. A fish-pond without Swans is bereft of one of its chief charms, and the Northern Sea without the Eider Duck would lose much of its poetry. This bird, however, is typical not only of the icy islands of Northern Europe, but may almost be regarded as a domestic animal. It is of the greatest service to the poor inhabitants of those dreary regions, who in a great measure remain true to their home on its account. Lastly, we cannot surrender the Great Auk (*Alca impennis*), though, if at all, it is more likely to be found now in Northern America than in Europe, where (as we have already remarked) it may possibly never be seen again.

Asia, that vast and teeming quarter of the globe, stamps her birds with an impress more peculiarly her own. We may venture to assume that the vast and hitherto unexplored tracts of this country have a surface more than twice the area of all Europe; at the same time many families of birds are known which belong exclusively to this continent. It is scarcely possible to determine how many species of other and more widely extended families may probably belong to it alone. That the white man, as well as the plants he uses as food and almost all his domestic animals, were brought originally from Asia, is an assumption confirmed by observation at the very outset. What Nature could offer to man, he found in his first home—the land which cradled humanity. Those birds which are peculiarly characteristic of Asia are the very birds we have domesticated and value most. At all events the Guinea-fowl, Turkey, Pigeon, Duck, Goose, and birds which came from other parts of the earth, were tamed much more recently. The Caucasian, whose birthplace is assumed to have been Asia, as he spread over other quarters of the globe, took with him from Asia those birds best suited to his wants. Hence we may without injustice accord the first place to them in our treatise.

History and tradition are both silent as to the date at which man first caught Wild-fowl with the object of taming them. We do not even know with certainty which of the four well-known species of the families in question is the most useful and most widely distributed of all our domestic birds. Most naturalists consider that the Jungle-fowl of India (*Gallus ferrugineus* or *Gallus Bankiva*) is the original stock. It is not improbable, however, that all the wild Gallinaceous birds of Asia have more or less claim in this respect. That the taming of these creatures reaches back to the earliest times is beyond doubt. Old authors mention the Cock as a common domestic Fowl. The ancient Greeks called it simply, "the bird."

With respect to other Gallinaceous birds, tradition has more or less to say. The Argonauts, in their world-renowned expedition, discovered on the banks of the Phasis, in Colchis, the bird which we now know by the name of its native home,—the Pheasant (*Phasianus colchicus*), and brought it to Europe, where it soon became acclimatized. For all that, it is strictly an Asiatic bird; and, indeed, its allied species are found wild only in Asia. The well-known Chinese Pheasant, which we have named the Golden Pheasant, as well as its more sober-coloured, though prettier, cousin, the Silver Pheasant, have their home in Asia. China is pre-eminently the land of the Pheasant; for, besides those just mentioned, several other species of the same family are found there, though it is only of late years that we have become familiar with them. Japan comes next to China as a Pheasant country; while in India there are only a few insignificant species of that group to be found. On the other hand, we find there and in the Malay peninsula, in Malacca, and in the islands of Sunda, singular members of the *Rasores*, or scraping-birds, which are exactly intermediate between the Jungle Fowl and the Pheasant: these are the pretty Kaleeges (*Gallophasis*), birds which appear destined some day to have a place in our poultry-yards, or to rank in our parks side by side with the Pheasant.

According to the Bible, it was Solomon's fleet that introduced the Peacock (*Pavo cristatus*) from its home into Palestine. Whether it was further spread from there is a question. It is more probable that we are indebted to Alexander the Great's ornithological tastes for the introduction of this beautiful bird into Europe. It is said of this extraordinary man, that he positively loved this bird, and inflicted heavy punishments on any that destroyed it. Other varieties of the Peacock are to be found in Lower India and the Sunda Islands, countries which are exceptionably rich in Rasores, or Scraping-birds. The most wonderful of all Fowls—the Argus Pheasant (*Argusanius giganteus*)—belongs to these districts; so, too, the closely-allied Peacock Pheasants (*Polyplectron*), birds in which the full splendour of the East Indies appears to be reflected.

All Gallinaceous birds are true types of the soil on which they live; their colours harmonize with it, and are represented in their plumage. Thus, the Monaul of the Himalayas (*Lophophorus refulgens*) is the very picture of the splendid richness of colouring, which is to be found in its home. On the heights of those sublime ranges—birth-place of two amongst the mightiest of streams honoured by deity, at the base of the highest pinnacle of the earth—the plumage of this bird scintillates and flashes, so as to be only inferior in its splendour to those colours that are kindled into life by the sun, and which are reflected in the bird; while it surpasses all its congeners in the glory of its sheen: the purple robes of the glacier, the silver surface of the stream, the blue mists of the distance, and the deep darkness of heaven's dome above complete this magic picture. Yet the Monaul is not an inhabitant of the mountain heights, but a child of the woodland portion of these ranges. In the same district we find the less-widely distributed Horned Tragopan (*Ceriornis satyra*), proving the same fact: its dress is possibly less brilliant than the species last-named, but in delicacy of colours and their happy arrangement it is far superior. The upper regions of the Himalayas furnish a singular member of this order, which we call the Himalayan Snow Pheasant (*Tetraogallus himalayensis*): it is a Partridge, larger than a Blackcock; a giant by the side of the other members of the family.

Asia, however, has endless diversity in its individual districts; it possesses deserts alongside of paradises. This is proved by Pallas' Sand Grouse of the steppes of Northern Asia (*Syrrhaptes paradoxus*), which seems more likely to have come from Africa than to be a product of Asia. It is a representative of quite a different district from those countries south and east of the Himalayas; it is a child of the desert in its whole appearance. A glance at this species of Gallinaceous birds is sufficient to furnish characteristic traits of the Avi-fauna of Asia. There are, however, many other birds which are peculiar to that portion of the globe: on this account it will be necessary to mention some of them. The Dwarf Falcons (*Hierax*), Lilliputians of their family, are characteristic birds of Asia: they are about the size of a Bullfinch, but are so fierce that they can be trained for the chase. The Indian sportsman calls them Mootee, that is, "a handful," and casts them from the palm of the hand, which they barely fill, like a shot, on flying game, not less than thrice their own weight, which, nevertheless, soon fall before them. Characteristic of that country we find the little Brahminy Kite (*Haliastur*) by the side of the most powerful of the feathered fish-hunting birds,—Pallas' Sea Eagle (*Thalassaetos pelagicus*), the Frog-mouthed Goatsucker (*Batrachostomus*), the Broad-bills (*Eurylæmus*), and the Lane-throated Bee-eater (*Nyctiornis*): these also are characteristic, *viz.*, the Hornbills, and amongst them the Rhinoceros Hornbill (*Buceros rhinoceros*), a creature which looks like a toy, or resembles the result of a most whimsical effort at creation by Nature, in those dreamy or fairy islands found in the southern hemisphere. From the forehead, above a tremendous and apparently useless beak, springs a horn, such that a glance at this bird irresistibly reminds one of the Rhinoceros, from which it gets its name. The Hornbills inhabit Asia, south of the Himalayas, its large islands, and Central Africa: it would appear that Asia, alone, can be their true home. The ancient writers called this bird the Horned Raven of India; and many naturalists have accepted this designation, inasmuch as they have, somewhat erroneously, classified the Ravens and Hornbills together as belonging to one family.

We have still to mention other birds which are strictly Asiatic: the Short-tailed Woodpeckers (*Hemicircus*), pretty little members of that rich group, so remarkable for the shortness of their tails; the Scansorial Barbets (*Megalaima*); the Koels (*Eudynamys*). Among these species the Indian Koel (*Eudynamys orientalis*), renowned in India for its choice of Crow's-nests, in which to lay its parasitic eggs; the Minivets (*Pericrocotus*), birds whose place lies midway between the Shrike and the Flycatcher,—these are distinguished by a peculiar colouring common to them all, a colouring in which fiery red and black predominate; the closely-allied Irena, with a plumage splendidly variegated with ultramarine and black alternately; the babbling and strong-legged Ground Thrushes (*Timalia*, *Garrulax*), allied to our Thrushes, and living in leafy thickets; the Forktails (*Henicurus*), large Wagtails with very deeply-forked tails, which frequent the brooks of the continent and Malay Islands; the Hunting Crows (*Cissa*), lovely birds, having beaks of coral-red, with feet to match,—they, in many respects, resemble the Jay, but in some the Orioles; the Beos or Grackles (*Gracula*), remarkable on account of a singular caruncle at the back of the head; besides many other so-called ground birds.

Amongst the Columbine-birds, the Nicobar Pigeon (*Calœnas nicobarica*), a bird noted for its gaudy and brilliant colours and its long narrow hackles, features which may also be reckoned amongst the characteristic points of the Asiatic Avi-fauna. Amongst the marsh- or wading-birds, which are, comparatively speaking, cosmopolitan, Asia is remarkable for the White and Black Crane (*Grus leucogeranus*), and the still more important Mantchurian Crane (*Grus montignesia*), which are regarded in China and Japan with the utmost reverence, as types of human greatness. We may further mention the Water Pheasant (*Hydrophasianus sinensis*), which is widely distributed over Southern Asia, and remarkable for its long toes and still longer claws, which enable the little creatures to run over waters with the slightest covering of water-weeds. It is from this bird that the Chinaman has taken the idea of making his melon-beds on a thick layer of floating-plants; and, indeed, it is peculiarly a Chinese idea to make use of the water for a dwelling-place, and to turn it into a kitchen-garden; in short, the Chinese bird is, in comparison, decidedly more clever than the corresponding species of Asia and America. Again, the highly-revered scavenger of the towns and sexton of the Ganges, the Maraboo or Adjutant (*Leptoptilos argala*), which, with its African cousin, furnishes the well-known feathers used as plumes, is deserving of mention. A fine is inflicted on any person who kills these useful animals. They, conscious of the protection afforded by man, live in quiet companionship with him, although his dead body becomes their prey after all. These birds stalk undismayed through the streets of large towns, or drawn up in long rows on the banks of a stream, await the dead, nursed in its soft arms—their last resting-place. It may be further remarked that aquatic birds—distributed, as they are, universally over the whole world—have, in Asia, forms that are peculiarly characteristic of that country.

We will now bestow a glance upon Africa, towards which the eyes of the whole civilized world are now turned—Africa, "that riddle of a triangle to the Ancient World," which thousands of years have been spent in exploring, with no other result than to leave us acquainted with its borders. And now-a-days fresh discoveries are made every day, while the old saying of the Romans, *Semper aliquid novi ex Africâ*, remains incontrovertible still. Africa is always furnishing something new. The characteristic bird of Central Africa, a creature which resembles a very marvel of fairy-land,—I mean *Balæniceps Rex*, the Boot-bill, or Shoe-bill, as the

Arab tribes of East Soudan call it—holds the first place amongst the characteristic birds of Africa which we are about to mention. There is, in fact, only one other species in Africa which is as remarkable as this—the Ostrich. It would indeed suffice if we were to take these two birds as types of Africa. One of them "the new wonder of the desert, the camel of birds, a bird which flies on its legs and steers with its wings, a winged giraffe, which affords the Arabs matter for a thousand fables;" the other, "the wondrous guardian of the holy stream which shrouds its source in secresy," in its origin a mystery, in itself a riddle. The sacred Ibis, no less a servant of the ancient god, added its long-established renown to the sacred stream. Legend has given the Boot-bill its celebrated name, a name as remarkable as the bird itself, which it has earned from the atmosphere of fable, with which it is surrounded, owing to its fantastic form—"the whale-head" and "king"!—and verily with him the innermost and obscurest realm of the world is revealed.

In addition to these, Africa possesses a large number of characteristic birds. Although its animal world in general and its Avi-fauna in particular are comparatively poor in species, Africa, nevertheless, possesses something peculiarly its own, while each order, in that country, has its characteristic forms.

One of the characteristic birds of Africa is the Gray Parrot (*Psittacus erythacus*), the choicest of its kind and the one most capable of learning—a Parrot which, so far as is known at present, has no species allied to it.*

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* Dr. Brehm has here forgotten the closely-allied species, *P. timneh;* while Mr. Blyth, we believe, is inclined to recognize even as many as three or four sub-species.—*W. J.*

Also as a Parrot (*Coracopsis*) may also be regarded as a distinctive bird of this part of the world, although it is only found in Madagascar and its neighbouring islands. Amongst the Passeres, we may regard the following as characteristic of Africa :—the Desert Trumpeter (*Bucanetes githagineus*) and other Finches (*Estrelda, Amadina, Mariposa, Pytelia,* &c.), the Whydah birds and Weavers (*Ploceus*), and, on the other hand, Sand and Desert Larks (*Ammomanes, Alæmon*). The order of the *Corvidæ* is represented by the Ox-peckers (*Buphaga*) and Glossy Starlings (*Lamprotornis*), the White-backed Crow (*Pterocorax scapulatus*), the White-naped Crow (*Corvultur*), and the singular Bare-headed Crow (*Picathartes gymnocephalus*), and lastly, by the Plantain-eaters * (*Musophaga*) and Colies * (*Colius*). Amongst the African birds of prey it is only necessary to mention one, the Secretary Falcon (*Gypogeranus serpentarius*). This is more remarkable and more characteristic of Africa than is the Lämmergeir of Europe, or the Condor of America. There is no species like it in the whole order. In this bird we find united in a most singular way the characteristics of the *Raptores* with those of the running birds. Although a good flyer, it runs in the chase more like a Bustard than a bird of prey, for its power is not so much in its wings as in its legs, which are very long. Only one other bird, and that too an African, has a frame constructed in a manner so singular as this, the Bateleur Eagle (*Helotarsus ecaudatus*), the true acrobat of the air, of which we shall by-and-bye have to speak at length. Amongst the order of the Fissirostres there are some which are also typical of Africa.

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* These are usually included by authors among the Scansorial birds, and having nothing to do with the *Corvidæ*, or, indeed, with any *Passeres*.—*W. J.*

It is here that the largest of all the Senegal Swallows (*Cecropis senegalensis*) lives, and its allied forms. Here, too, are found the most remarkable of all Goatsuckers, which the Arabs aptly name the four-winged (*Macrodipteryx africanus*, *Cosmetornis vexillarius*), because one or two of their pinion-feathers extend beyond the others in an extraordinary manner, and the extremity is furnished with an outstretched plume, so as to resemble, indeed, a second wing. There are but few songsters worthy of any particular mention, though there are some extraordinary birds of this kind in Africa; at the same time, it is rather among other groups that characteristic specialities are to be found. Amongst slender-billed birds may be noticed the *Nectarinidæ*, of which numerous forms are found in Africa: these, however, are found in Asia and the Southern Archipelago. Next to these we may mention the *Promeropidæ*, *Promerops*. The soft-billed birds are represented by the Honey-guide (*Indicator*) and Coucals (*Sericosomus*), very remarkable birds; and also of the Bee-eater (*Merops*) mention must here be made, for, in Africa, they are developed in an exceptional manner.

Africa is far behind Asia with respect to Gallinaceous birds; still she possesses forms and species peculiar to herself. This country is the true home of the Sand Grouse (*Pterocles*), Francolins, and Guinea-fowl. The Sand Grouse and Francolin are also found in Europe and Asia, but must, nevertheless, be regarded as specially characteristic of Africa, for they are genuine children of that land. They are pre-eminently creatures of the desert, in a sense in which none others are, for they wear the pale livery, which at once shows where they live. Sand-colour and black predominate in this dress; gray and white seldom occur, or, when they do, are hidden by other feathers. A similar, though somewhat brighter, dress is worn by the Desert Lark, and several other running-birds, of which I will make further mention. Nor are the habits of these birds less singular than their plumage. They are endowed with the power of locomotion in such an extraordinary degree as to be able to travel over the wide and sterile regions they frequent with facility. This power and the singular harmlessness of their character are typical of these children of the wilderness. Such characteristics are found more or less strongly marked all the desert over, so that its kindred tenants are more or less similar in form, as, for example, the Ostrich and the various Bustards. Not to pass over characteristic marsh- and water-birds in Africa, I will, in conclusion, refer to the Black-headed Plover (*Hyas ægyptiacus*), Balearic Cranes (*Balearica*), Brown Heron (*Scopus*), Open-billed Heron (*Anastomus*), Giant Heron (*Ardea goliath*), although the two last named are also represented in Asia by allied forms, and, lastly, the Spur-winged Goose (*Plectropterus*).

Though the three divisions of the Old World may be widely different in their special characteristics, they still have something in common. On the other hand, in America, we find an animal creation absolutely distinct. In that country birds have the widest range of diversity in form, while they vie with the rest of the world in the brilliancy and beauty of their plumage, and, indeed, in many cases, carry off the palm. The practised ornithologist can best appreciate the richness of America in independent forms. Bonaparte, in his 'Catalogue of the Birds of the World,' gives forty-four sub-families, comprising 1851 species, as belonging to America exclusively. Add to these the species which she possesses in common with other portions of the globe, and one may readily perceive the wealth of life in the New World. Beyond dispute, America is the quarter of the globe best adapted, according to the laws already mentioned, for the distribution and change of certain forms. It embraces all the geographical zones of the earth, except the extreme rigour of the South Pole; and thus it possesses every variety of climate. Besides this, it is perfectly isolated, inasmuch as it touches the Old World only at its northernmost point, while it is surrounded on every other side by the ocean. It is, indeed, a narrow island, laved on every side by life-giving waters, while its interior is fed by the falling vapours which rise from them. America is without those desert tracts that occupy so large a portion of Asia and Africa,—tracts which, but for the scanty dews of night, remain constantly dry from year's end to year's end; but is, on the contrary, with rare exceptions, well supplied with water. However this may be, wherever warmth and moisture combine, we invariably find a paradise of brilliancy, and, as a matter of course, the animal—or rather the bird—world is in unison with it. On this account South America is the true "El Dorado" of the naturalist,—the golden land, where Nature has surpassed the boldest forms of her conception by the creatures she has produced.

Let us select from this inexhaustible store those characteristic birds which are most valuable to us. There are too many new animals there to allow of a superficial examination. We will, therefore, divide this continent into North and South, as Nature and Science combine to do.

North America reminds us, from time to time, very much of Old Europe or Northern Asia; yet she has her own peculiar forms. "For as rosy dawn differs from sunny eve, though both owe their effect and receive their reflected glow from the same sun, in like manner does America differ from the continent of the Old World, similar in many respects, and in some all but identical; in most, she is essentially and obviously different, not only in form, but in colour and development." The bird-world is well represented in North America, and Europeans are indebted to it for the Turkey. This bird, *Meleagris gallopavo,* now spread all over Europe, especially in the South, lives wild, to this very day, in large flocks within the mighty and well-watered forests of both North and South America up to the higher latitudes.* A second member of this useful and numerous order, *Cupidonia cupido,* Pinnated Grouse, inhabits the desolate, yet wide and well-grassed, plains, known by the name of the Prairies. The Americans have, in some instances, given the name of this bird to these tracts.

The other Wood-grouse found in North America resemble those of the Old World much more than the Prairie Hen, and are, therefore, scarcely worth particular mention. On the other hand, we must allude to the small Quails (*Ortyx*), which are represented by several species in the northern part of this continent. A superficial glance at the Avi-fauna of North America presents other species worthy of notice. This continent possesses a Parrakeet (*Conurus carolinensis*); it harbours congeners of our Finches (*Niphæa hyemalis*); several Grosbeaks (*Coccoborus*), to a certain extent the representatives of our Hawfinch; the over-rated Cardinal

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* Dr. Brehm is not quite correct in this statement. Mr. D. G. Elliot, the best authority on the subject, recognizes three species of Turkey, all of which are confined to North and Central America, but do not enter South America.—*W. J.*

(*Cardinalis virginianus*) and Tanagers (*Tanagra*), links between granivorous birds and Warblers; the singular Bunting Finches (*Passerella*); some members of the Starling family (*Icterus*), which supply the place of our familiar species. America shows its peculiarity in its Kites (*Nauclerus*, *Ictinia*); one Caracara (*Polyborus*); one big Vulture (*Sarcoramphus californianus*); and two other Vultures (*Cathartes aura* and *Coragyps atratus*); the Prairie Owl (*Pholeoptynx hypogœa*); Purple Martin (*Progne purpurea*); several Tyrant Flycatchers; and the Mocking-bird (*Mimus polyglottus*); as well as its giant Woodpeckers (*Campephilus imperialis* and *C. principalis*). America has her Humming-birds; her peculiar Cuckoos (*Coccygus*): she has, too, special Pigeons, amongst which we must mention the Migratory Pigeon first of all, because it may be considered as the most remarkable bird on the whole continent. Vogel calls it the "herring of the air," and the comparison, although incomplete, as all comparisons generally are, is by no means inaptly chosen, for, probably, no other bird flocks together in such myriads as it does. Of the remaining birds of this part of America, I will only make mention of two others, the Canadian Goose (*Cygnopsis canadensis*) and the Summer Teal (*Aix sponsa*), principally for this reason, that both are found acclimatized with us in Europe.

North America is incomparably poorer than South America. It is only on reaching the Southern Hemisphere that we first enter the "truly New World;" for it is here that we first meet with all the wonders of the tropics. Here the gigantic and the wonderful are to be found alongside of the magnificent and the beautiful. Flowers take the form of butterflies; while butterflies and bees resemble birds. In richness of colouring and variety of form America knows no stint. Upon the highest peaks of its mighty mountains, as well as in the darkest recesses of the primæval forest, and on the bosom of its ocean, life is seen in all around. From such a cornucopia it is difficult, if not impossible, to choose that which is most characteristic: here, every animal bears upon it the unmistakable impress of its home—a home like this! I must, perforce, confine myself to the birds most generally known, and can only give names where I would describe, generalise where I should like to enter upon details.

South America is the home of the Araras (*Ara*) and Parrakeets (*Conurus*); the native land of different Tanagers (*Pitylus* and *Tanagra*), the Hang-nests and Orioles (*Icterus*, *Cassicus*), the Blue Crows (*Cyanocorax*, *Cyanocitta*), the Tooth-billed Falcons (*Herpetotheres*, *Harpagus*), and different Hawk Eagles (*Pternura*, *Morphnus*, *Harpyia*), the various Screaming Buzzards (*Rostrhamus*, *Hypomorphnus*, *Milvago*, *Ibycter*), the King of the Vultures (*Gyparchus papa*): the wonderful Guacharo (*Steatornis caripensis*), is a tenant of this land, a bird, in some degree, resembling the Goatsuckers, and which inhabits the most desolate caverns and crevasses of the mountains,—over whose peaks the Condor wheels its wondrous flight,—a Swallow-like bird, which lives on fruit, and has given rise among the Indians to more legends than any other of its neighbours, which is, in some degree, regarded as an enchanted being, and is sought after as a great prize. Not to mention numerous Tyrant Flycatchers, we here meet with a remarkable number of singular singing birds, such as the Bush Shrikes and the Greenlets (*Thamnophilus*, *Vireo*), the Manakins and Cocks-of-the-Rock (*Rupicola*, *Pipra*), the

Bare-headed Cotingas and Bell-birds (*Gymnocephalus, Cephalopterus, Chasmarhyncus*), which enliven the forest with their singular notes; the Ruff Thrushes (*Myiothera, Pteroptochus*), &c. The order of climbing birds, *Scansores*, is here represented by the Blue Creepers (*Cœreba*), which take the place of the Sun-bird (*Nectarinia*) of the Old World; by the Spine-tails (*Synallaxis*) and the Oven-birds (*Furnarius*), which are remarkable for the singular nests they build; by the Dendrocolaptine birds (*Anabates*), which connect the soft-billed birds with the Woodpeckers, as well as, indeed, several peculiar species of the latter. The order of Humming-birds is found not only here, but in Central America to perfection. These birds may be taken as a specimen of the infinite richness of America. It would be enough to single out the Humming-birds of the New World as its characteristic birds; and, indeed, as such these, beyond all others, claim the attention of naturalist and novice alike: they are, to some extent, the embodied poetry of exuberant Nature in these regions. "Of all animated beings," says Buffon, "they are the most fairy-like in form, the most brilliant in colouring. Our precious stones and metals, polished by the hand of art, are as nothing in comparison with these rich jewels of Nature. Song excepted, she has showered upon them all her gifts collectively, gifts which are accorded to other birds singly. Lightness, vivacity, speed, grace, and brilliant colours, have all been bestowed upon these tiny favourites. Every jewel sparkles in their plumage, plumage untarnished by the dust of earth, as, all their life long, they seldom touch the ground; they dwell evermore in the air, fluttering from flower to flower, the freshness and brightness whereof belong to them alone; they sip the nectar, and inhabit only those heavenly zones where blossom follows upon blossom in an everlasting spring." It would seem scarcely necessary, after speaking of these, to mention other birds characteristic of South America, and yet I must not pass them all by in silence. These that follow are peculiar to that continent: Jacamars (*Galbula*) and Puff-birds (*Bucco*); the Trogons are more perfectly developed here than in any other country, and the Trogon may be regarded perhaps as the most beautiful bird in the world; add to these several Cuckoos, and among them the well-known Ani (*Crotophaga ani*), which must be mentioned before any others. In South America we find the Toucans (*Ramphastos*), those singular creatures which may very well be compared with the Hornbills of the Old World; there are many singular Pigeons here: the Tinamous (*Crypturus*), the different Guans (*Penelope, Ortalida, Oreophasianus*), and the Curassows (*Hokos, Crax*). The Rhea (*Rhea*) here fills the place of the Ostrich of the Old World; amongst Rails are found the noteworthy Screamers (*Palamedea*); amongst Herons and Storks, the Boat-bill, Trumpeter, and Cariama (*Cancroma, Psophia, Dicholophus*); the unassuming Spoonbill of the Old World is here replaced by one dressed in a lovely rose-colour; while our Swan with its uniform colour is here represented by one with a black neck and white body (*Cygnus nigricollis*); among the Pelicans, Cormorants, and Darters, we find the Frigate-bird. Richness, exuberance, and splendour, characterize America; alongside of the beautiful and the brilliant are found the abnormal and the singular, and these are often united in one and the same creature.

If, in accordance with recent views, we regard all the islands lying in the Pacific Ocean as one continent, with the exception of such as border on Asia and Africa, we find that this continent must be classed with the Old World; for its animal kingdom has more in common with Asia and Africa than it has with America. The Southern Archipelago is rich in characteristic birds. To begin with the noblest of them all, I will speak first of the Cockatoos, which form a group in sharp contrast to Parrots, and are remarkable for their manifold species. The true Cockatoos are found in the Malacca and Philippine Islands, and also in New Guinea. The Black Cockatoos belong to Australia; the Ground Cockatoo and the Night Parrot frequent the several islands near this continent. Amongst these, the Night Parrot or Kakapo (*Strigops habroptilus*) is unquestionably the most remarkable, for it holds the same position with reference to Parrots that the Owl does to the Falcon. Its home is confined to New Zealand, and, at the present day, to the southernmost island of this group. There it frequents the lofty forests of the alpine valleys, and, differing from all other individuals of its order, it lives in hollows under the roots of trees, or in the clefts of huge rocks, hiding itself all day, and only emerging after sunset. Its ways and habits remind us of certain owls which, like it, lurk in hollow places; in movements it resembles the Gallinaceæ. It is, altogether, one of the most singular birds known.

The Southern Archipelago may be considered as the true home of the Parrot-tribe, and in no other part of the world do we find this class so well represented. This is further shown by the Lories—Parrots, most brilliant in plumage, and known from of old. Unlike others of the family, they subsist almost entirely on fruit, and, in some degree, upon the nectareous juices of shrubs and flowers. This is further evinced by the Broad-tailed Parrakeets, of which many species are found on the continent of Australia, in whose forests they congregate in vast numbers. Among the former may be counted the King Lory, specimens of which are not unfrequently found in our zoological collections; while among the latter we have the Grass Parrakeet and the Corella, which are now quite common with us. Further, it is in this Archipelago, in New Guinea, and in the Papuan Islands, that the Pigmy Parrot (*Nasiterna pygmæa*) is found, a bird scarcely larger than our Siskin.

Of the *Passeres* we find many species, some of which are very singular, in the Southern Archipelago. In the Sandwich Islands there is a very curious bird which reminds us of our Crossbill, though it cannot possibly be reckoned amongst granivorous birds,—I mean the Parrot Finch (*Psittirostra psittacea*). On the continent of Australia, and in the Papuan Islands, there are gorgeous Finches, which, in spite of their relationship to the African birds, differ widely from these in form, as well as in colour and markings: the different kinds of Waxbills, &c. (*Poëphila*, *Chloëbia*, *Amblynura*), which may, perhaps, be considered the most beautiful of all true Finches. The family of the *Corvidæ*, or Crows, is still more profusely represented. Of these the most noteworthy are the Birds of Paradise: they, for the most part, frequent the primæval forests of New Guinea, "that enchanted land of the ornithologist, where the birds verily appear to be made of gold and precious stones." It is no wonder that the history of these beauteous creatures was, in former ages, encircled with dark and dreamy legends; for, of a truth, the Bird of Paradise seems the very embodiment of a fairy tale. In early times men looked upon this bird as a creature whose home could be none other than Paradise, whose life could not be aught else than heavenly; and if naturalists, now-a-days, rob us of those legends, they are none the less of the opinion that a Bird of Paradise, living in its native forest is, in very truth, a fairy being, or vision of enchantment. Lesson doubts whether it is possible, in words, to convey any adequate idea of the splendour of its plumage. No other Crow in Australia can vie with this splendid creature. Nevertheless, the Australian *Corvidæ* distinguish themselves above their fellows by an extraordinary flexibility of voice, and are, on this account, commonly called flute- or organ-birds. These may be regarded as intermediate between the Crows and Butcher-birds, the larger species resemble the Crows, the smaller the Butcher-birds. The Bower-bird (*Ptilinorhynchus*) is worthy of mention; related to our Oriole, it is remarkable for its beautiful plumage, and still more so on account of its singular habits. They build lovely bowers, in which to disport themselves, and decorate them fantastically with shells, or other bright things that please the eye.

As regards birds of prey, the Southern Archipelago falls far behind all other parts of the world, except Europe: it has only a few singular forms. We may, however, make mention of the Wedge-tailed Eagle (*Uroaëtos audax*), an inhabitant of Australia, and a worthy representative of our Golden Eagle, seeing that its manner of life exactly resembles that of its European cousin. America has its Penguins; the Southern Archipelago its Giant Goat-suckers (*Podargus* *); singular wide-mouthed birds, which are the true connecting link between the Owls and the

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* These are always called "Podargus;" thus, Cuvier's Podargus, &c.—*W. J.*

Goatsuckers, possessing, indeed, the peculiarities of the former, and their habits, quite as much as they remind us of the latter. The Goatsuckers are found in our quarter of the globe, although some species may be met with in the larger Asiatic Islands.

The forests of the Southern Archipelago are, it is true, not rich in good songsters: they have some, however; and these bear but little resemblance to those found in other parts of the world. Amongst them may be reckoned the Pittas (*Pittidæ*); which, although found elsewhere, exhibit their highest state of development only in the Southern Archipelago: these birds give rise to much diversity of opinion as regards their scientific position. They belong to the Thrushes, but are exceedingly singular in their structure, and their habits are not less so. They are not strictly related, but, in exterior appearance, form a sharply-defined family, while they have a strong natural resemblance to each other, both in form and colouring. The most remarkable songster in all the Southern Archipelago is the far-famed, and in every respect most singular bird, the Lyre-bird (*Menura superba*). It is about the size of a Pheasant, and, with its allied species, forms a distinct family. It is one of those creatures which will fit in with no system, owing to the difficulty of assigning it a proper place. Formerly it was classed with the Pheasants; now-a-days it is regarded as a singing bird, from its manner of life and habits of action. It is included amongst the Mocking-birds of its native home, and possesses the gift of imitating sounds of every kind, in a manner that is most misleading. Like the American Mocking-bird, it can mimic the dog's bark, a man's laugh, the songs and cries of numerous birds, a child's screams, and similar sounds.

Even to the present day its habits are but indifferently known; but all fresh information we receive concerning it proves it to be a most remarkable bird.

The Southern Archipelago is also noted for its remarkable *Scansores*, or climbing birds. On the larger islands there are no Woodpeckers to be found, but why they are absent cannot easily be explained. On the other hand, there are other climbing birds in profusion. Those characteristic of Australia are the Honey-eaters (*Meliphaga*), which, in some respects, remind us of the Bee-eaters, though, at the same time, the tongue differs essentially, that of the latter being filiform. They frequent the gum-trees, which form a prominent feature in the landscape of Australia; and these are so constantly associated, that the sight of either invariably suggests the presence of the other. They feed upon insects, pollen, and the rich honey of these trees, and obtain this food with their long brush-like tongues, which are specially and wonderfully adapted for that purpose. The Poë or Tui, which we have already mentioned, belongs to the same family, and is one of the most celebrated singing birds of the Southern Archipelago.

Amongst the group of Kingfishers there are several remarkable species. The greater part of the Laughing Jackasses, King-hunters, &c. (*Dacelo, Tanysiptera, Syma*), find shelter in this part of the world. It is true that these also occur in Asia and Africa, but they are only found in perfection in the Southern Archipelago. This region is the native land of several remarkable Cuckoos, including the giant of them all, the Channel-bill (*Scythrops novæ hollandiæ*). Pigeons and Doves abound in the Southern Archipelago, and the most singular forms amongst them are found there. It is enough to mention here the Crowned Pigeons (*Calœnas nicobarica* and *Goura coronata*). Besides the most singular in this respect the Tooth-billed Pigeon (*Didunculus strigirostris*), the Crested and Bronze-winged Pigeons (*Ocyphaps*, *Geophaps*), are also worthy of mention.

The most singular forms are found among the running birds of the Southern Archipelago. From Sumatra southwards, the islands produce those extraordinary Gallinaceous birds called *Megapodius*, on account of their powerful feet. Their form itself is striking, and their habits and mode of propagation still more so. No creature is so careless of its young. The old legend, concerning the Ostrich in its youth, is quite true of this bird. It forms an immense heap of vegetable matter, and lays its eggs in them to be hatched by the heat of the fermenting mass. When the eggs are all laid, the mother gives herself no further trouble about her young, which have to feed and shift for themselves from the very first day that they are hatched.

The Southern Archipelago has also very many representatives of the Ostrich family, more, indeed, than any other part of the world. In Australia we have the Emu (*Dromaius novæ hollandiæ*), which, in general, very much resembles, so far as its habits are concerned, the African and American Ostriches. This bird has become familiar to us only of late years; but long before, nay, almost 300 years ago, Europe was astounded by an account of its congener, the Cassowary (*Casuarius indicus*); and, more recently, two other closely-allied forms have been discovered. Unlike other birds of its order, the Cassowary lives in the most impenetrable thickets of the forest; and its habits are so retiring, that any observation of them at all is exceedingly difficult. Each of the species referred to is, so far as we know, confined to one island, or, at most, to a few neighbouring ones. Still more singular than the Cassowary is the Apteryx, or Kiwi kiwi (*Apteryx australis*). According to the opinion of modern geologists, the Southern Archipelago is not the most recent, but the oldest portion of the globe. This opinion is based on the fact that one of the earliest essays of creative power is found there, in the shape of an imperfect bird. As in the case of other Ostriches, its wings are merely rudimentary, and thus it is of necessity confined to the ground. Unlike the others, however, it is not diurnal in its habits, but nocturnal, spending the day concealed either in holes formed naturally, or in hollows made by itself. It only emerges from these after sunset; and, like our Woodcock, feeds on worms and insects. This creature necessarily appears more remarkable to us than either the Ostrich or Penguin, as it only finds a parallel in the *Ornithorhyncus*, or Duck-billed Platypus of Australia.

To name some of the swimming birds characteristic of this part of the world, which is so rich in eccentric forms, I may mention the New Holland Goose (*Cereopsis novæ hollandiæ*) and the Semi-palmated Goose (*Anseranas melanoleuca*), two birds of limited swimming capacity, which, in spite of their Goose-like forms, are much better adapted for moving on land than for swimming. They bear, indeed, but a vague resemblance to Geese. I must not omit the now well-known Black Swan (*Cygnus atratus*).

The distinctive features of the Southern Archipelago are strikingly shown in its animal kingdom. The abrupt and manifold diversity of the living creatures in this part of the world may be explained by the way in which it is sub-divided into several hundred insulated tracks. As this portion of our earth seems to be at the present moment in a state of development, birds are found here with forms not yet complete; but where the vegetable kingdom has reached the highest stage of development, there the birds also possess the glowing colours peculiar to the South. If the Southern Archipelago were as well known and explored as Europe is, we should undoubtedly find the hypothesis confirmed here, that every bird harmonises and is in unison with its home, and that it cannot be otherwise.

Every part of the earth and each zone has birds peculiar to itself. The North has strength, freshness, grace, and song; the South, strangeness of form and brilliancy of colour; the East possesses a severe style of beauty; the West, simplicity and elegance; the high mountain ranges and the sea are the homes of mighty flyers; the plains and the poles are the domain of running and fishing birds; diversity is characteristic of the forest; uniformity, of the tree-less expanse. Wherever we look, we cannot but recognize and admire the infinite harmony of Nature.

CHAPTER III.

FUNCTIONS.

"Und ohne Eigenthum hat Jeder g'nug."
HERDER.

The functions or vocations of birds are connected in the closest possible manner with their habitats. I would have my readers to understand that I mean, under the words function and vocation, the ways and means by which they seek their living, for this employment is with them productive enough of labour and care. Though I will not gainsay the Bible verse—"They sow not, neither do they reap, nor gather into barns; yet your Heavenly Father feedeth them;" yet every inquirer cannot but acknowledge that birds must plod hard to obtain their requisite nourishment. I may remark, then, that in speaking of the vocation of a bird, I do not refer to a trade or calling. Thus, in accordance with the circle of distribution within which the bird moves, it requires food of a special character, whether of one or more kinds. This is the principal cause which restricts birds to certain localities; and for this reason we only become conversant with their habits of life by a combined examination of their food and home. So their functions, in the sense in which we take them, are objects not unworthy of notice. By possessing a certain knowledge of the same, we are enabled to explain many things relating to the lives of animals, which would be to us, otherwise, but riddles. As, with the human race, the calling or vocation is the result of mutual dependence of individuals upon one another, so, in a similar manner, we find the functions and vocations of animals arising from their dependence on the plant-world and on other exterior influences; for as each creature only pursues that calling which is in full accordance with its bodily gifts and conformation, it is, therefore, also necessary that its residence should be situated where these gifts can be of service to it. In the following pages I would, first of all, treat of the ways and means by which the nourishment of different birds is obtained, especially those of our native country.

The easiest method by which an animal can obtain nourishment is, undoubtedly, that afforded by food exposed to the eye, and requiring no other exertion than that of picking it up. The granivorous feeders among the land birds, which do not obtain their food by means of scratching,—for instance, the Finches, Buntings, Larks, and Pigeons,—belong to this class. Their labour consists of collecting scattered grain, and occasionally insects. Those granivorous birds which are obliged to extract the seed from its husk have, necessarily, more to do. To these belong the Sparrow, Reed Bunting, Greenfinch, Hawfinch, Siskin, Goldfinch, Linnet, Bullfinch, and Crossbill; with them the work, in spite of the excellent tools with which they are provided, requires great strength and a certain amount of skill. Scraping birds (*Rasores*), such as the whole Gallinaceous family, are obliged to exert themselves in a similar degree to get their sustenance.

To the above we may add the fruit-eating birds, which scarcely require to exert themselves in a greater degree. Most of these pluck the berry or the fruit, which serves them as food, with the beak, swallowing it whole, or separating the nourishing particles from that which is useless. The Hawfinch eats the kernel of the seed; berry-eating birds swallow the fruit whole; Parrots devour the pulp of the same, cracking the stone also, where such is to be found. The first use the beak alone in feeding, and the latter the foot as well; both, however, pluck the fruit at their ease; while the Flycatchers and Trogons, whatever fruit they may eat, gather it on the wing. Among the insect-eating birds we find similar gradations of capacity in their several functions: the Wagtails, Redstarts, and Wrens, pick up insects, together with their eggs and larvæ, from off the ground, as also from roofs of houses and the backs of animals. Next come the Whitethroats, Willow Wrens and Reed Warblers, Tomtits and Goldcrests: these seize their prey on the ground, from branches and leaves, or extract it from flowers, cracks in timber or walls, and also catch it on the wing. The climbing birds have a hard time of it, seeking their food as they do in all sorts of places, situated in perpendicular or horizontal positions, often drawing out their prey from various holes and lurking-places. The Hoopoe does the same on the ground; the Tree-creeper, Wall-creeper, Nuthatch and Woodpecker amid trees and ruins; and the latter have to handle their tools to some purpose, pecking and hammering the live-long day to earn their bread.

All the above mentioned crafts or trades, if we may so term them, are exercised alike by most members of the Crow family. These latter also gather grain, insects, berries and fruits, which they either pluck or shake off trees and bushes, extracting the seed from the husk: they rob nests as well, and even catch fish like the Terns, or birds and small mammals like the *Falconidæ*. Their extraordinary intelligence is doubtless productive of such versatile talent. Besides this they are thieves from their birth, recognize no infringement on their profession or guild as such; and, moreover, they are also well able to take care of themselves under all circumstances; when pressed by dire necessity they act the part of beggars in towns and villages, when scraps from the kitchen or the stable do not come amiss. It is owing to this activity and versatile talent that one rarely finds a member of that family starved to death through over-scrupulousness.

The Honey-suckers (*Meliphaga*) bear a certain resemblance to the insect-eating birds in their method of feeding. These singular creatures perform, amongst the flowers, the work of the Woodpecker, inasmuch as they invade the secret folds of the same with the points of their laminated tongues, using them, so to speak, like a brush or broom, with which they capture the insects concealed there.

Of those birds which capture their prey on the wing, the Flycatchers occupy the lowest grade. Many amongst these only follow the insect-swarms for a short distance, and then dart down upon their prey; others—take, for example, our Spotted Flycatcher—make longer flights from the post or branch on which they take their stand, and also rise high in the air in pursuit of their prey. The King Crows (*Edolius*, *Dicrurus*, &c.), cousins of the above, which inhabit both Asia and Africa, pursue the same method, but to a greater extent. The Bee-eaters, again, are still greater adepts at this airy chase: these take their stand on bare branches of trees, waiting quietly for some time, yet they will fly a long way after an insect and pursue the chase for hours together, like those true fishers of the air, the swallows. These last rarely commence the chase from the branch of a tree, and their cousins the Swifts never; these last are distinguished from the true Swallows from their hunting only in the higher regions of air.* We now come to the principal nocturnal hunters, our Goatsuckers, which in the south can boast of numerous and very singular-looking relations and connections; monsters among swallows, with mouths big enough to swallow the smallest member of their own family, feathers and all. Our night, being but short, suffices for one solitary species of this tribe, while in the lower latitudes there is ample occupation for numberless species of nocturnal insect-hunters.

The Humming-birds of America, which may well be called children of the flowers, are also insect-eaters, and clever ones too. They thoroughly explore the different blossoms, extracting the smaller insects from their calyces—inaccessible to other birds—by means of their tiny split tongues, as with a pair of tongs; hanging suspended in the air before a flower, they reap a harvest where no other bird can gather aught. They, however, not only play the part of Woodpeckers among the flowers, but also that of Flycatchers, for they often follow flying insects like the latter, and thus unite in themselves the vocations of very different birds.

Among birds of prey each one earns his livelihood without depriving other members of his class of their bread. The most unpretending workers among these are the Vultures, especially the smaller species, the Egyptian Vulture and others. They are poor inoffensive mendicants, who never show any inclination to commit murder. If they are fortunate enough to find a carcase, they devour as much as the weakness of their beaks will allow them; they are, however, as a rule, contented to subsist on the excreta of both man and beast, and some apparently sustain life rather on these and offal from the habitations of man, than on carrion. Thus, owing to the food they eat, these birds are amongst the most useful scavengers of tropical towns, and their constant activity in pursuit of food keeps off pestilence from the more densely inhabited quarters.

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* This is not invariably the case. I have often seen Swifts hunting in scores close to the ground, and, *vice versa*, have observed Swallows feeding very high in the air. Most field-naturalists must have, doubtless, observed as much.—*W. J.*

The larger and more powerful members of this family, the true Vultures, despise such loathsome food: they devour carcases of vertebrate animals of all kinds. These birds also, and not unreasonably, fall under the grave imputation of attacking sick or dying men and beasts in out-of-the-way places, and of devouring them alive; they must, however, rank among the lowest of all *Raptores*. The well-known and notorious Lämmergeir holds but a slightly higher rank above these low types, for it only attacks a living creature when able to throw it over a precipice from the suddenness of its onset, and at the same time feeds mostly upon carrion, especially on the bones of carcases. The true Sea Eagles are thorough thieves, yet the dead bodies of animals thrown up by the sea form the principal part of their food; nevertheless they will also kill game when they come across it. The Buzzards much resemble these birds; they feed chiefly on living animals of a small size when compared to their own; they also eat insects, but do not disdain carrion. Insectivorous birds may well be looked upon as noble robbers in comparison. To these we must add a family which do not seem in any way connected with the above, and which are only a connecting link between the singing birds and the Falcons, namely, the Shrikes or Butcher-birds. This small family, however, can compete with the most accomplished murderers for ferocity and cruelty, and are fully entitled to the name they bear. When restricted to insects they invariably pounce upon the largest species; some even seize vertebrate animals, and at times they attack those superior in size to themselves. The insectivorous Falcons cannot be classed higher than these, but only in the same category. The Red-footed Falcon of Southern Europe is most assuredly a more harmless bird than the Shrike: this is the most perfect type of these pretty little marauders, which live principally on grasshoppers; and in the larger species, for instance, the Kestrel (a mouser as well), remind us of other members of the Falcon family. They deserve praise for their indefatigable industry, partaking of nothing which they do not earn by their own exertions. By this they distinguish themselves from another family of the *Raptores*, namely, the Kites. These latter are accomplished thieves, which, added to their size, would seem to fit them for noble exploits in the fray; but, alas, they are sadly addicted to the meanest deeds. That they should look upon a fresh carcase as a *bonne bouche* we might easily pardon, for Eagles are much of the same opinion; but it is not to be denied that begging is their principal means of existence. They oblige the noblest of the family to leave their hard-earned booty by their importunity and noisy screams! The tiniest of the smaller Falcons does not thus demean itself, though the Sea Eagle will; but of it I will speak further on. Having finished with the lower orders of *Raptores*, we now come to the true hunters of vertebrate animals.

Of these we may consider the reptile-eating Hawks and Eagles as lowest in the scale. The Secretary bird is a bird of prey, which runs on—and rarely likes to rise from—the ground, living exclusively on snakes, lizards, frogs, and other reptiles. A smaller member of this exceedingly curious class of hunters is the Gymnogene (*Polyboroides*), which flies lazily from place to place, and only runs after its reptile-prey on having missed its swoop. It prefers, however, those creatures which hide themselves in clefts and holes, whence they can be drawn out with its long talons. The Harrier Eagles (*Circaetos*), which are also found in Europe, hunt much after the same fashion as other Buzzards; while the most perfect of all Eagles, the Bateleur (*Helotarsus*) only seizes and kills snakes, while on the wing. The Ospreys are noble birds, despising any other game than fish, and never touching carrion; they earn their fare, partly flying and partly diving, by their own strength and industry. With these we may rank the noble Eagles; they do, it is true, relish a fresh carcase sometimes; still they are such daring robbers that they appear worthy of their ancient renown. It is not without reason that they have earned the title of "King of Birds:" they really do lord it in the air and on the earth at the same time. Running game, even, does not remain unattacked; they wage war with, and conquer, mammals and birds alike,—sitting, running, or flying, it is all the same to them. Gos- and Sparrow Hawks do the same, but differ widely from the Eagles by their underhand thievish ways, and are guilty of deeds which forbid their being in any way placed on an equal footing with the more noble bird; for instance, the Goshawk will carry off a whole brood, nest and all, to its young! There is only one family superior to Eagles, and that is that of the true Falcons; they are, indeed, the most knightly of all birds, and rarely condescend to take their prey from the ground. Usually they only chase and strike feathered game, and this openly and honestly, without stratagem or trick. They rush upon the flying quarry like a flash of lightning from the sky, and seize and kill their prey in the open light of day; indeed, one might, more often than not, with reason substitute the word adversary, instead of prey. They are, indeed, splendid creatures, noble in their bearing and actions; a fact that I cannot resist repeating.

The nocturnal *Raptores*, taken as a body, are far behind their diurnal representatives. They seize their prey secretly, and are materially assisted in this by their noiseless flight, as well as by the cloak of night. Generally they only take sitting or running prey. If, however, some unhappy bird chances to fly across their path half asleep, they will also catch it on the wing. Their nocturnal companions, bats, are also followed and captured by some species; this is, indeed, the noblest sport they can pursue.

The manner in which marsh- and water-birds procure their food is not less subject to variation than that pursued amongst land-birds. Of Waders, the following—Cranes, Storks, Ibises, Curlew Sandpipers, Sandpipers, Godwits, Golden Plovers, Lapwings, and Oyster-catchers—simply pick up with their beaks from the surface of the earth whatever comes in their way, such as grain, insects, worms and reptiles, molluscs and mammals. The

Turnstone does as its name implies,—turns over the stones on the beach in search of food. Snipes bore with the bill into the soft ground and mud, feeling with it for worms, larvæ, grubs, &c. Stilts and Avocets walk some distance into the water in pursuit of nourishment, and are thus, doubtless, blest with a greater variety of food than those of their relations, whose operations are limited to the muddy banks. The Rails and Waterhens unite each and all of the above methods of obtaining food. They feed on many plants and seeds; glean from off the surface of the ground, mud, and water; plunder nests; walk on the bottom under water, and dive as well. They are all swimmers, and make universal use of this accomplishment. Some species appear especially adapted for certain portions of the morass: in those places where the water is either covered with broad-leaved or other aquatic plants, lying close to one another on the surface, the Gallinules (*Porphyrio*) and Parras seek their food, running over them with ease and celerity. It is doubtful whether the Herons should be classed before or after the class just mentioned, so gifted in the diversity of means at their disposal for seeking nourishment. They are certainly more restricted to certain places than our friends above mentioned, who pursue their trade among reeds and rushes alike, above as well as under water. Their habits, mode of hunting, and, indeed, their very prey, appear to us sufficient reason for assigning them the highest grade among marsh-birds in this respect. Besides which, they are in nowise confined to the marsh alone, but are quite as fond of wide, open pieces of water as of those bordered with reeds and rushes, provided fish abound therein. Slowly marching into the water, they keep a sharp look out all round while they pursue their sport, which consists almost exclusively of fishing. The smaller species alone feed principally on insects, grubs, &c.; the larger members of the family rarely take anything but fish, unless driven to do so by necessity. On this account, their vocation would appear to me to rank high.

Among aquatic birds we possess, as we have before mentioned, a world rich alone in its diversity; from this it is almost self-evident that their vocations are equally various. On land, as on the water, each district alike is made the best use of. Some birds inhabit the shore, or reside within a short distance of the same; others, again, obtain their living on the surface, others beneath the waters; while some exist at the expense of their neighbours.

Geese obtain their nourishment in the simplest manner of all. They chiefly feed on plants, and graze like mammals, or pick up scattered grain from the surface of the earth. Swans, too, feed on plants and grain, but are also fond of insects and molluscs, seeking these at the bottom of the water, that is to say, that they dive as far as the length of their neck will permit. The Flamingo (*Phœnicopterus*), which may be described as a stilted swan, feeds in a similar manner: its labours are generally performed wading, though occasionally when swimming; while stalking about in shallow water it ploughs the bottom with its colander-like bill. Ducks do more: they may be divided into non-diving and diving Ducks. The first feed amongst the surface-slime, with that well-known rapid motion of the beak so often observed in the common Duck when seeking insects and seeds; they likewise feed on many water-plants, and sometimes graze. Diving Ducks may be again subdivided into those which dive solely by means of their feet, and those which also use their wings for that purpose. The former do not dive to any great depth while in search of food at the bottom; their prey mainly consists of aquatic insects and molluscs. The latter, among which we find the Eider Duck, are the best adapted for this purpose; they dive a depth of several hundred ells, and feed upon the different shell-fish they find on the bottom, besides young fish and spawn. In agility they are surpassed by the Mergansers, the most active of all the tooth-billed divers. These last dive, it is true, only by means of their feet, and do not go down to so great a depth as the Eider Duck; but they feed almost exclusively on fish, which kind of chase requires the most active swimming and diving powers. The saw-billed divers are, to a certain extent, pigs among Water-fowl, rooting and stirring up the ground, anywhere and everywhere, while seeking food.

The long-winged aquatic birds are possessed of quite a different accomplishment; with them swimming is a secondary business, and flying, on the contrary, their principal power. They obtain their food mainly by partial diving, and that at a distance from the water's surface; and in this art different degrees of perfection may be observed. The Skuas are, as far as mere strength goes, well able to provide for themselves, but always prefer feeding at the expense of their neighbours in the most graceless manner possible. The true Gulls are, to a certain degree, bunglers in the art of catching, and the larger more so than the smaller. Their principal nourishment consists of the refuse of the sea, and offal thrown from ships, which they find floating on the surface of the water; they rarely capture anything alive: they are the true Ravens and Crows of the ocean. These are surpassed, in every respect, by the Terns, which elegant creatures understand the art of diving, from a height, to perfection. While the Marsh Terns (*Hydrochelidon*) are especially insectivorous, the Sea Terns (*Sylochelidon*) are more given to fishing, and some dive with much rapidity, even to a considerable depth. The Gannets alone are capable of surpassing them in this respect, seizing fish, as they do, at a depth of six feet below the surface.

The structure of the feet places the Gannets among the Pelicans; they are distinguished, however, from the former, chiefly by their mode of gaining a livelihood. Pelicans fly easily and well, but cannot dive; they fish only in shallow water, for which operation their drag-net-like pouch is especially adapted. Cormorants, on the contrary, are indifferent flyers, but can dive to a depth of perhaps thirty ells to catch fish, and manage to swim with the same ease and rapidity as their prey. The Darter earns its daily bread in a similar manner. This bird swims with great activity under the surface of the water in pursuit of its prey. Lastly, the Frigate-bird combines diving from a height with diving while swimming; it can fly and dive almost with equal facility, and obtain its living on the surface of, as well as under, the water:

The Petrels are, to a great extent, obliged to confine their operations to the surface of the water. The Stormy Petrel (*Procellaria*) follows the course of the billows, dropping in a curve upon them, when it picks up anything that it finds floating upon their surface. The

Albatross, flying at a greater elevation, satisfies itself, like the former, with what it can pick up from the surface of the waters. The Stormy Petrel sweeps close over the surface of the wave, feeding on minute molluscs and radiates, such as the smaller star-fish and Medusæ, which are always to be found amongst the floating sea-weed. Their field of operation is the surface of the waters, and a slight depth under it; while the former go somewhat deeper. None of the Petrels dive. The Shear-water, however, can: it combines the Petrel with the Diver, and pursues both trades with equal ability. I may call it the most accomplished of all sea-birds.

There now remains for me to mention but one class of birds which gain their livelihood among the waters: I refer to the true Divers. Among these, the Grebes (*Podiceps*) obtain their food with the least difficulty. They only dive in shallow water, and but few species among them are piscivorous; many feed on aquatic-plants, insects, and molluscs; some also catch insects in the air. The true Divers (*Colymbus*) are, on salt water, what the Grebes are on fresh, but are more given to catching fish. Lastly, the Guillemots and Auks (*Mormon*, *Cephus*, *Uria*, and *Alca*): these are great catchers of shell-fish, star-fish, molluscs, worms, and other of the lower inhabitants of the sea. The Great Auk (*Alca impennis*), which ranks with Penguins found in the South Polar Seas, may be regarded as a voracious fish, with a bird's form and feathers.

Thus, there is not a region of the earth, not the smallest spot, which does not afford nourishment for birds, whether it be the highest regions of air, or the lower depths of the waters; they are, one and all, fruitful in this respect. Birds are creatures which utilise almost all the animal and vegetable products of the earth, in such a way that each obtains its daily bread.

CHAPTER IV.

ADAPTATION OF STRUCTURE TO HABITS.

" Nature to them, without profusion, kind,
The proper organs, proper power assigned ;
Each seeming want compensated of course,
There with degrees of swiftness, there of force ;
All in exact proportion to their state,
Nothing to add and nothing to abate."
Pope.

A very clever man, whose name I have, however, unfortunately forgotten, gave me the following simple explanation how the Swan came on this earth of ours :—"The Creator," said he, "first formed the Goose as the original primæval aquatic bird ; it swam into deep water, and sought to feed at the bottom, but was unable to reach far enough down, though stretching its neck to the utmost. It came to pass, however, that at last the neck elongated, and the body grew larger : thus the Goose by degrees became a Swan !"

This astute interpreter of the inexplicable activity of Nature must have had in his mind's eye a good old time,—a time when, in the transformation of an animal, the matter of an extra vertebra or so was not regarded as of much importance. Every impartial person must at once, however, regard him as an unreflecting idiot ; for according to his explanation everyone must acknowledge that the existence of the relative forms of birds can be accounted for in this manner. This same Goose might, if it had thought of it, just as easily become a Woodpecker had it tried to climb, or possibly changed into an Eagle had it given way to bloodthirsty reflections!

That this remark is no distortion of an intelligent postulate or assumption is shown in Mr. Darwin's celebrated work on the 'Origin of Species.' This naturalist, it must be admitted, also takes into consideration the effect of climate, but, on the whole, dreams in a similar manner; and, bribed by an appearance of proof, the world accords belief to this dreaming. If we allow ourselves to be guided by him, we should be in a position to trace out not only one single primitive form or archetype of aquatic bird or other animal, but also the radical form of animated creation in general, even up to the first monad. By this course of argument the miracle of creation is narrowed, without reaching any fuller or final explanation. Mr. Darwin still remains in our debt. We might as well, on the other hand, assume, and with as much reason, that Nature, in all her richness, gave to each creature its especial form, and fitted it for its work, from the very outset.

Every living creature—as we may observe in the case of a duckling hatched under a hen—learns in an incredibly short space of time how best to make use of its bodily gifts, thereby fulfilling its mission on this earth. The young Falcon soon learns of itself to pursue its quarry, the Swallow to catch insects, the Chicken to scratch for food, the Woodpecker to climb, and the water-bird to dive and swim. Each is compelled, by the actual construction of its body, to carry out the end for which it was created. It is therefore the adaptation of the structure which decides the means of existence, and not the kind of nourishment which determines the structure.

The equipment of an animal is always adapted to the special work it has to perform. Its tools, so to speak, are simple, and yet are always of the most perfect mechanism; they may be excessively diverse, and yet their intimate connection with the home and vocation is easily recognizable. This will appear quite clear to us if we hold strictly to the assumption that every animal is the product of its home, and chooses, almost of its own free will, the mode of living which best accords with the gifts Nature has bestowed upon it. A judicious selection of certain members of the feathered tribe will show us the marvellous adaptability of their equipment, namely, their construction, plumage, weapons of offence and defence, means of motion, colouring, &c.

Let us first examine a Falcon, the very impersonation of a powerful, dexterous and active robber. Its body is strongly and compactly built; the breast arched, and the skeleton well knit together; it is covered with smooth, close-lying feathers; attached to the body we find long, pointed wings, the pinion-feathers of which are exceedingly hard and elastic; the short arm-bones admit of great rapidity of movement, and the manner in which they are bent affords an ample surface, to which the muscles are attached; the tail, which plays the part of rudder, is long and rounded, and the feathers of the same are broadly webbed, thus offering a large surface capable of expansion. The splendid eye renders the perception of the smallest and most distant object a matter of facility; it is large and concave, and thus adapted for seeing at long distances; added to which it is placed forward in the head, and is highly mobile, capable of embracing a greater or less field at will. Its weapons are murderous indeed: attached to very strong legs are long powerful toes, terminating with large curved nails; the centre toe is longer than the others, and all are rough on the under surface, especially on the large wart-like protuberances answering to the ball of our foot; the nails are convex above and grooved beneath. This terrible hand is irresistibly contracted by means of mighty muscles, which, however, only reach the toes in the form of sinews, the tremendous nails inflicting fearful triangular wounds of the most deadly character. The beak is weaker than the claws, but is quite as well adapted to tear as they are to hold fast or to strangle. The horny upper mandible terminates in a hook similar to the nails of the feet, and is furnished with a sharp-edged tooth, answering to the canine tooth in carnivorous mammals; the lower mandible is sharp at the end and at both edges. A predatory creature thus armed must perforce be king of the air. Nothing escapes its far-seeing eye, its patience and activity, or can ever release itself from the terrible talons when once within their grasp. This bird may be well compared to a feathered arrow traversing the air with the rapidity of thought, a living and winged instrument of death!

The structure and general equipment of the Owls, those nocturnal robbers, are essentially different from those of the above, and render them able to glide unseen and unheard on their prey. They are robbers in the lower, where the Falcon is so in the higher, sense of the word. The last pursues its calling in a gentlemanly manner, while the first is an underhand assassin. The build of the body differs greatly in its principal component parts from that of the Falcons. The carcass is rounder, less compactly knit together, and lighter than that of the above; it is thickly clothed with the softest feathers, almost woolly in their texture; the wings are broad, round, and well adapted for gliding; the pinion-feathers are weak, though elastic, on their outer edge, which cuts the air; the rays of the feathers are each separate one from the other, standing out in isolated points. The toes are feathered as well as the tarsi, but from under these soft feathers peer the longest and sharpest of nails, which readily clutch the smallest prey. The head is very singularly constructed, the eyes and ears occupying almost the whole of it. The first are very large and flat, being thus well adapted for keen sight at short distances; the last we have already described; they indeed resemble membranous shells, and are comparatively larger than those of any other animal; they are still further supported by the long, stiff, radiate feathers which surround them; the beak is sufficiently powerful for the work it has to do. Thus gifted, the Owl is particularly well calculated to seek its prey, in the darkest night, by aid of eye and ear, and pounce suddenly upon it, gliding up unseen and unheard.

Both Falcons and Owls seize their comparatively large prey with their claws alone; another group of the predatory fraternity do so with the beak: I allude to the Swallow tribe in general. Their claws differ widely from those of the true *Raptores;* a close inspection of the feet of the most highly developed member of that family, the Swift, plainly shows this. Its body bears a certain resemblance to that of the Falcon; the plumage is, however, much closer and harder; the wings are quite differently formed and developed from those of the above-mentioned bird; attached to the exceedingly short, curved arm-bone, we find long, hard, and yet very elastic feathers, which are furnished with short, compact webs, and are somewhat curved; the wing can be moved very rapidly, by means of the short, mobile arm. The tail is long, broad and forked, probably to allow of the most varied movement of this rudder, so necessary to the Swift, and to permit of an instantaneously greater or less powerful use of the same. These wings and this tail combined, render it not only possible for the bird to cleave the air with incredible swiftness, but in a certain degree for it to live in that element, so to speak. With these creatures flight is but sport: the Swift is never tired. The structure of the organ with which it captures its prey is naturally much simpler than that of the true *Raptores*, though equally well adapted to the work they have to perform. The eye, placed forward in the head, is very large and somewhat flat, and is deposited in a shell-shaped orbit, which is clothed on the outside with feathers to the very edge. With this organ the Swift can discern the smallest insect at a considerable distance, and the mandibles are so constructed as to be able to capture the same with certainty. The beak itself is small, but the gape, reaching far back under the eye, is a regular abyss! The feet, on the contrary, appear stunted; the tarsi very short, and all four toes are turned forward and are provided with sharp nails. They cannot be used for walking, but enable the bird to cling to and crawl into those places which it frequents exclusively for the purposes of roosting and breeding, principally holes in towers or rocks. They are useless for any other purpose, if we except fighting with its rivals during the courting season. If the two combatants fall together on the ground, one powerful movement of their pinions suffices to enable them again to take wing. Between the Swift and its nocturnal representative, the Goatsucker, a difference is to be remarked similar to that existing between the Falcon and the Owl. The Goatsuckers possess a plumage soft and light, like that of the Owls; their wings, though pointed, are not nearly so much so as those of the Swift; the pinion-feathers are softer, and the tail-feathers comparatively both longer and broader than with the above. The eye of the Goatsucker is especially adapted to the uncertain light of night and evening; the jaws and gullet are much larger than those of the Swift; the opening of the mouth extends far behind the eye, and is, further, garnished with stiff bristles, which in a certain degree augment its power of seizing its prey. The weak and clumsy feet only permit of a shambling walk; the nail of the middle toe is serrated on the inside, thus affording greater facility for grasping the bark of boughs, upon which this bird loves to rest longitudinally. In this way we see that the Goatsucker is fully enabled to move, noiselessly and with certainty, in pursuit of its prey. In addition to this, the colour of its plumage bears the closest possible resemblance to the bark of trees, and thus serves to hide it from the view of an enemy in open day.

Our examination becomes the more interesting the further we extend our circle of observation. Let us now pass in review the "tools" with which the Woodpecker is furnished,—the carpenter of the forest, as we may call it. Its body is thinly and smoothly feathered; the wings are rather short, though in other respects they are not peculiar; the tail, feet, beak, and tongue are, on the contrary, singularly developed: these, indeed, constitute our workman's most important implements. The tail is composed of ten feathers, and is pointed; its construction is as follows:—the two middle tail-feathers are the longest and strongest; their shafts terminate abruptly in a point and act as springs; the rays of the web are in close contact one with the other near the shaft, but are separated at their ends; they are stiff and hooked; they deviate from their original direction, turning downwards on either side, so that the feather very much resembles the roof of a house, the shaft or quill representing the the ridge. Under this roof lie the second middle feathers, which are constructed in exactly the same manner; under these, again, the third and fourth pairs, which still resemble the second middle in structure, and it is only the fifth, or outside pair, which is constructed in the usual manner; this, however, is covered by one of the tail-coverts, which is so stiff that it may be looked upon as adapted for steering purposes. Attached to the short tarsi we find four, rarely three, long powerful toes; in the first case, one of them is a reversible one, capable of being turned either backwards or forwards, according to the will of the bird. Each of these toes is furnished with a strong sharply-curved nail. Looking upon the Woodpecker as a climbing bird, the appropriate construction of both its tail and feet is self-evident. It can, by means of its feet, so sharply shod and capable of grasping a considerable surface, suspend itself without exertion to a perpendicular trunk, the tail preventing it from sliding downwards. When the bird props itself in this manner, not only the points of the eight principal feathers are pressed against the stem, but each individual ray of the three middle feathers does the same, so that, by reason of their great number, even the slightest inequality in the bark serves as a *point d'appui*. While in the act of climbing, hammering, or chiselling, the tail serves as a spring. These labours are performed with the assistance of the bill, so wonderfully adapted, from its singular wedge-like shape, to these especial duties, though seldom or never used to collect food. For this last-mentioned duty it is provided with a long round tongue, capable of being projected to a great length, and furnished with a horny tip, which is again provided with small hooks: with this weapon it manages to extract insects which lie hidden in holes and crannies. The Woodpecker seems especially adapted to seek its livelihood from the abundant nourishment afforded amongst the cracks, rents, and hollows of the main body and limbs of decayed trees. Its beak serves as chisel, and its tongue as harpoon, while foot and tail enable it to look down with contempt upon all the artifices contrived by man to assist him in climbing.

A step lower conducts us to other members of the feathered tribe, who obtain their food from the ground. Among these we find some harmless individuals, who, according to circumstances, are often obliged to seek safety from their enemies in concealment. The colouring of their plumage affords them the most ready means of escape: these tints always closely resemble the colour of the soil, on which they pass the greater portion of their lives; and, indeed, in some cases, the one changes exactly at the same time and in the same manner as does the other. The plumage of most Larks, Pipits, Partridges, many Waders and running birds, shows a design and colouring eminently corresponding with the localities where they are found. The same may be said of most of the weaker birds and, indeed, other animals; but in no case is it so evident as amongst those birds which essentially live on the ground. They seem to form part and parcel of the soil on which they live; as the one changes so does the other; that is to say, there are certain birds which are to be found only where the colour of their plumage corresponds with that of the soil. The Skylark looks like one of the clods on our fields. The Lark of Tartary resembles a lump of the soil of the steppes of South-eastern Europe or Central Asia; in the desert I not only met with an isabel-coloured Sand-lark, but also with yellow Crested Larks. In parts of the arid plains of Kordovan, where the soil was of a ferruginous colour, I discovered an ochre-coloured Bunting-lark. The same holds good with the *Gallinaceæ*, though to a still greater extent. I have already mentioned that with some species of this family the female, which mostly lives on the ground, alone adopts the colour of the earth, while the plumage of the male is highly coloured; I have also stated the reasons for this arrangement. Besides these, I have mentioned other members of the family which bear the impress of the localities they inhabit, and have especially referred to one particular group—the Ptarmigans—to which we will yet further turn our attention.

This bird inhabits the high mountains of all the alpine districts, as well as the arctic regions, and is especially remarkable, above all other members of the group, for the peculiar way in which it changes its plumage. Its home can boast, so to speak, of only two seasons—winter and summer; and the adaptation of the plumage of this bird to each season in turn is in perfect harmony with the same. In the shape of its body it, on the whole, resembles other groups among the *Gallinaceæ;* its plumage, however, distinguishes it from them all: it is thick and close, reaching down to the very toe-nails; the change it undergoes in colouring is very curious, and is peculiar to this bird. In winter the plumage of the Ptarmigan is snowy white, with the exception, in the male, of a dark line over the eye, and the twelve outer tail-feathers, which are black, as also the beak. In summer the livery of the male is brown or blackish, excepting the pinion and belly feathers, which are white; that of the female is rusty yellow, intermingled with wavy lines of a darker hue. The use of this garment is evident; it is the creature's best protection. In winter it so closely resembles the snow as to defy the scrutiny of the sharpest Falcon; in summer it perfectly assimilates to the colour of the ground in the locality where it lives, for the white pinion feathers remain hidden under the wing-coverts so long as the bird is on the ground, being only exposed in the act of flying. This conformity of colouring is just as important for the protection of the bird as is the construction of its feet to enable it to seek its food. The unassuming Ptarmigan rarely suffers for the want of the above; there are occasions, however, when searching for food is accompanied with some difficulty. A deep snow-storm covers the earth, while alternate thaws and frosts form an icy crust, which renders this occupation a laborious task, requiring instruments especially adapted for the purpose. The Ptarmigan is provided with them in the shape of long broad nails; and, thanks to these natural shovels, which are annually renewed,* is enabled to dig deep runs, or galleries, under the snow, and thus obtain access to its old feeding-grounds.

With Gallinaceous birds the foot is the principal instrument; with others, whose plumage resembles in colour the localities they frequent, the bill is the most important tool. The Common Snipe, like the Ptarmigan, reminds us in a striking manner of the places it inhabits by the colour and markings of its plumage. It is a thorough child of the swamp. The entire upper surface of the body is a close imitation of the cover in which it is found, aye, even in detail, for the two iridescent stripes which run along the entire length of the back resemble so closely the half-withered leaves of the reed-like grasses, that one might almost imagine that they were really bits of it adhering to the back. The light colouring of the belly is unimportant, as it is always hidden from the enemy, but the upper part of the breast again, on the contrary, closely resembles the grasses. It is very difficult indeed to discern a Partridge, a Lark, a Pipit, a Sandpiper, or any other bird whose plumage matches the ground, when in the act of squatting: in the case of the Snipe this is wholly impossible. I know many sportsmen who can easily find a hare on her "form," but have never met with any one who could discern a Snipe either squatting or running. It often happens while shooting that a Snipe rises within two feet of the sportsman without his having previously been aware of its presence, and this in spite of the most careful observation. This assimilation in colour of plumage to the ground is essential to the preservation of the bird; besides this, the Snipe is thoroughly well equipped in other ways. I will pass by the waterproof plumage, pointed wings, and the full eye placed far back in the head, and at once direct my remarks to the bill: this is very long, somewhat spoon-shaped at the extremity, and is covered with a leather-like membrane instead of a horny case. The nerves with which the bill is provided give to it a very fine sense of touch and convert it into a pair of the most exquisitely delicate tongs, with which the bird seeks for and obtains its food amid the mud and slime.

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* The author distinctly states that the nails are annually renewed.

Among the remaining marsh birds the Blackwinged Stilt always strikes me as being one of the most remarkable. It is comparatively the lightest of the whole assembly. Its little body, scarcely equal in size to that of the Turtle Dove, carries two long, pointed wings, while the head is furnished with a thin awl-shaped bill, like other members of the family; the body is supported on immensely long legs, the longest, perhaps, in comparison with the size of the trunk of any known bird, the Flamingo not excepted. This long-legged gentleman frequents the low flat shores of the sea and rivers, and is able by means of his extraordinary structure to wade in water a foot deep, even when the soil at the bottom is muddy, the lightness of his body rendering a solid resting-place unnecessary for his stilted legs. The feet of the Avocet and Flamingo are partially webbed; thus both these birds are able to wade in deeper water than the Stilt, and to walk on an exceptionably slimy bottom; in the latter case they sink even less in the mud than does the Stilt, owing to the surface presented by their semi-webbed feet, while in the former they can advance further into the water by swimming.

The three above-mentioned birds lead us on to the true Natatores, whose equipment comes next under our notice. The well-known and majestic Swan will serve as the type of those birds whose aquatic movements are confined to swimming on the surface of the water. I need not long detain my readers with details concerning this class of swimmers. Every one is well acquainted from personal observation with the oval-formed body, the broad oar-like feet, the long neck and the singularly toothed bill. These birds look like animated ships. The strikingly close plumage increases the circumference of the body, adding at the same time but little to its specific gravity, while the fatty matter with which the feathers are anointed renders them impermeable to water; the feet do double duty, as oars and rudder.

We now come to the singular bill, which resembles a colander in its structure; it is furnished on the inside edges of the upper mandible with a series of horny plates or laminæ ranged side by side like the teeth of a comb; besides this, it is covered both inside and out with a membranous skin like that of the Snipe's bill, through which a number of nerves ramify; it is considerably assisted by the large fleshy tongue, which is also provided at the edges with tooth-like processes; this, indeed, renders complete the most perfect organ of taste vouchsafed to the feathered tribe. The tooth-billed, or more properly serrated-billed, bird is alike fitted for grazing on plants and grasses, or seeking its food at the slimy bottom; in exploring the latter the water strains through between the comb-like apparatus, leaving a residue from which the nutritious portions are extracted after having come in contact with the tongue and gums.

Most saw-billed birds are fairly provided with the means of flight; this is, however, not generally the case with the fishers of the deep—the Divers. With them the stunted character of the wings is remarkable, and in this form they finally vanish altogether, that is to say, they are no longer wings. The general aspect of the Diver at once shows it to be thoroughly fitted to rule the depths below.

The wings are attached so very far back to the long narrow body that it is very difficult for the bird to walk at all; the plumage seems extraordinarily soft in its texture, feeling as it does like silk to the touch; it is, however, in reality very hard and compact, and at the same time perfectly water-tight. The bill is long, deep, powerful and sharp at the edges, in addition to which in some species it is strongly serrated, the points of the saw-like notches being turned backwards; the moderately long neck is remarkable for its suppleness. The feet and wings appear to be the most distinctive features as regards their structure; the first serving as oars and the latter more or less as fins, both being highly developed notwithstanding their dissimilarity. The tarsus is compressed at the side, the sharpest edge being presented to the front; attached to it are three or four toes, which are either partially or wholly webbed or lobated; these, however, together with the web, are capable of being compressed into a very small compass. The wings are adapted for diving in proportion as they are diminutive in size, and hard of texture. The tail is in some species composed of long, broad, elastic feathers, in others it is exceedingly short; in the first case it makes an excellent rudder, in the last the feet perform this office. I need only take as examples two species of this numerous family to make myself understood—the Grebe and the Penguin. Both are remarkable forms, and unite in themselves the peculiarities of the whole family.

The bodies of both these birds bear a strong resemblance to a long-necked ninepin, flattened above and below, standing on two legs and decorated on either shoulder with two flap-like appendages. The Grebe is covered with hard satin-like feathers, which take a strong curve inwards; the webs being of some breadth; the two appendages in this species merit the appellation of wings; the tarsi resemble knife-blades placed with their edges foremost; the toes diminishing in thickness from the end to the keel are each separately furnished with a lobated web; the tail is altogether wanting, being only represented by a tuft of ragged feathers; the snake-like neck carries a small head, which is armed with a long pointed bill. No other bird can surpass a creature so equipped in powers of swimming. The pointed beak, straight outstretched neck and skittle-shaped body are thoroughly calculated to dart through the water; the feet are the most perfect which can well be imagined for the purpose for which they are intended. All impediment to forward progress appears, with such a structure, to be entirely removed. The Grebe lives on the water, like the Swift in the air. The Penguin is, only as far as appearances go, better adapted for swimming than the Grebe. The form of its body does not differ in the general character of its structure from that of the latter, but does so considerably in the following details. The feathers may be compared from their structure and position (not unlike tiles on a roof) to fishes' scales; the wings, almost bereft of feathers, have become veritable fins; the feet are feathered to the toes, which are all turned forward—only three of these however are concealed by the web throughout their whole length; the tail is composed of very short, powerful, narrow, elastic feathers: the beak alone differs but little from that of the Grebe. Provided with a thick layer of fat under its leather-like skin this bird is a very seal among birds: indeed it truly resembles that animal in form and habits. It swims with the same rolling rapidity, walks, fishes and lives in the same manner. It may be called a bird as much as the seal is a mammal; it is in truth, like this animal, a hermaphrodite creature, a link between its own class and the fishes. A description of its form renders any explanation of the working of its organs unnecessary.

Finally, let us take another glance at that bird which I have already said was to the sea that which the Swift is to the land; I allude to the Frigate-bird, belonging (as its Latin name denotes) essentially to the ocean, for it is indeed the "Eagle of the Sea." To its body, although not much larger than a Raven's, are attached the most singular, and, comparatively speaking, the longest wings of any bird, and, at the same time, the most powerful of all rudders; the former are each no less than four feet in length, but only a few inches broad, while the tail falls little short of sixteen inches and is deeply forked; the webs of its feathers are broad, which allow for the expansion of this huge rudder. The neck and head are both strong, and the beak is exceedingly sharp and powerful, terminating in a hook; it has a wide gape, and the gullet is furnished with a very elastic skin or pouch. The feet are attached to short legs and are covered with feathers. Its long toes are semi-webbed behind, while in front they form very talons provided with sharp nails. Such a combination of structure makes it easy for the Frigate-bird to cover immense distances in its flight; it can cleave the air, sailing over the water like an Eagle, and take its prey like a plunging Diver, swim like a Cormorant and dive as well. These powers are only found united among this richly endowed order of birds, and it is this versatility that crowns it Sovereign of the Seas.

This superficial glance, briefer than we could wish, and simply confined to only a few of a class, will help to show us the exquisite adaptability of the mechanism of the feathered tribe. The examples given speak for themsleves, and any further remarks would be superfluous. If I were to enlarge upon this subject in detail, I should have to speak severally of the different groups; I could not, however, prove more than I have already done in what has gone before.

CHAPTER V.

THE IMPORTANCE OF BIRDS IN THE ECONOMY OF NATURE.

> " You call them thieves and pillagers; but know
> They are the wingèd wardens of your farms,
> Who from the corn-fields drive the insidious foe,
> And from your harvests keep a hundred harms;
> Even the blackest of them all, the crow,
> Renders good service as your man-at-arms,
> Crushing the beetle in his coat of mail;
> And crying havoc on the slug and snail."
>
> LONGFELLOW.

ONE of the German governments has lately done what the Egyptians did thousands of years ago, and the Indians and Americans have done for centuries. They passed a law for the preservation of birds. By this act they acknowledged the importance of these useful creatures, and recognized the benefits which we directly and indirectly derive from them.

Michelet, in his extravaganza on the bird, sketches, with a superficiality truly French, the most gloomy pictures by way of demonstrating the utility of this creature; for my part I do not consider it necessary, especially towards my German—and, therefore, educated—readers, to express what M. Michelet, by a number of horrible tales, has sought to do. The importance of the bird-world to the whole of animated nature is immeasurable. "They are," says Tschudi, in his inimitable work on the 'Zoology of the Alps,' "the representatives of life, brightness, and joyous movement, throughout the universal globe. Without them the mountains would be desolate and utterly devoid of charm. The first thing man seeks is life; inanimate masses crush his spirit, the lifeless desert saddens him. Imagine our woods and meadows, rocks and streams, robbed of their merry tribe of feathered inhabitants, and we at once lose one of those links which connect us with the lower organic and inorganic world." What birds are to man beyond this I will seek to depict further on. It suffices at present to prove, by sheer statistics, the benefits he receives from them when he treats them really as the "lord of the creation" ought to do.

Tschudi looks upon birds as a connecting link existing between the highest and lowest conditions of life. This view must be taken in the widest sense. They stand between the two, working on either side; in the one case beneficially, in the other the reverse. The true guardians of equilibrium in the animal kingdom, they avert and prevent the dangerous attacks of the lower orders of animated nature, especially the superabundant increase of insect life. This mighty army, which preys even upon itself, is really only in some degree kept at bay by the feathered tribe. To permit the insect-world to make undue head-way would amount to destroying Nature, for, in that case, the plant-world, on which her existence depends, would cease to exist. The whole of remaining creation combined would not be able to arrest the destruction caused by insect-life so effectually as birds. Up to the present time we are acquainted with about 1400 species of mammals and 800 of reptiles, whereas the birds amount to 8000. It is now a recognized fact that insectivorous birds form the most numerous class, and are the most widely distributed. It is, therefore, easy to conceive the usefulness of the bird, when I state that three-fourths of the most numerous classes are either partially or wholly insectivorous; besides which, as I have before said, many birds daily devour from three to four times their own weight of insect-food. Take, for instance, the quantity devoured by a single pair of Titmice in a day, and we find it amounts on an average to 2000 insects per diem; this, by simple calculation, gives us a yearly total of 730,000 insects which are destroyed by this pair. Add to this the fact that one pair of Titmice will produce in one season no fewer than ten young birds, whose yearly nourishment will, together with that of the parent birds, give a grand total of about four millions of insects. This statement proves to us the utility of one species alone, and also that the amount of good done by the entire bird-world must be incalculable. It is, if not striking, still worthy of remark, that the most noxious creatures of all classes are principally destroyed by birds. In support of this assertion I will call the attention of my readers to several species of insects which are especially destructive, and then enumerate those birds which are their direst enemies.

My readers have assuredly heard, or read, of the depredations committed by locusts, as well as of their insatiable appetites. I have often observed this creature, which the Arabs call the "leaf-stripper," while devastating the fields or forests of Central Africa. With the exception of the feathered tribe the enemies of the locust are limited to a few species of monkeys, mice, squirrels, hedgehogs, lizards, snakes, and frogs. The numbers devoured by these creatures, when taken altogether, is but "a drop in the ocean," when compared to the wholesale raid made on the locust swarm by birds. No sooner have these insects established themselves in a forest, and commenced their depredations, than their feathered pursuers immediately arrive from all sides, and the chase commences. Those Storks (*Ciconia*) and Ibises (*Tantalus falcinellus*), which are breeding during the locust season, arrive in countless numbers, often indeed from great distances, and support themselves and their young exclusively on these insects. Such birds as Kestrels, Lesser Kestrels, Buzzards, Harriers (*C. pallidus*), Crows, Rollers, Lamprotornis, Guinea-fowls, and Francolins, now in winter-quarters, approach the swarm and commence the work of destruction; Herons, even, if there happens to be water in the forest, as also Terns (*Sterna anglica*) take part in the raid. Hovering over the tops of the trees one sees hundreds of busy little Falcons, which seem to swoop down almost every second, and, actively seizing a flying locust, rise and devour it on the wing. The twigs and branches, weighed down with the insect-plague, are sought by other birds. The Crows, stalking and hopping hither and thither, assiduously gleaning some, and shaking still more to the ground, are ably assisted by the Lamprotornis, Cuckoos, and Hornbills (*Buceros*); while the remaining members of the feathered crowd assiduously turn their attention to those locusts which have fallen to the ground. If the forests stand in inundated districts, localities generally attacked by the locust on account of the foliage being fresher and greener than elsewhere, their arrival in such places is the signal for the approach of a whole tribe of Ducks, Gulls, and other aquatic birds, who aid in their destruction by feeding on those which fall in the water.

All the birds remain as long as do the locusts; some even follow the mighty army in its migrations. Thousands of greedy birds must be satiated! Hundreds of thousands of locusts are required to supply this demand; and should they number even billions, their ranks are yet in the end consumed!

It is not necessary to go out of our native land in order to observe a similar instance; for in Germany, even, some species of insects appear in countless thousands. A wood infested by the caterpillar of the Pine Lappet, or the Gipsey Moth, is a terrible scene of devastation. Visiting the plagued spot, one crushes them under foot by dozens at every step. Their excreta fall from the trees like rain, and the odour of their decomposing bodies taints the very air for some distance around. The unfortunate forester clamours in vain; each day shows a loss of some thousands of thalers. He tries every means to arrest the enemy; but, alas, without avail! Man is powerless, without the assistance of birds, to extricate him from his difficulty, and cries to heaven for help! His feathered friends, however, perform their part with untiring energy. Cuckoos, alone, can prey on hairy caterpillars with impunity; but these birds are, unfortunately, nowhere very numerous. The eggs and pupæ, however, of butterflies give ample occupation to thousands of active hunters. All the climbing birds, Tits, and Goldcrests, are unremittingly employed in seeking out and devouring them. It is a recognized fact that the winter following a plague of caterpillars, such as I have described, finds the forest inundated with countless numbers of Titmice and Goldcrests, as well as Woodpeckers of every kind. The forester who is well acquainted with his business knows their worth, *and* *affords them all the protection that lies in his power;* while the stupid, ignorant bird-catcher erects *a Titmouse trap on the borders of the wood, because it pays, forsooth!* Cuckoos, as before mentioned, also do their best to destroy the pest. Homeyer remarked, that in the case of a certain forest suffering under the inflictions of the Pine Lappet caterpillar, over a hundred Cuckoos, in the act of migrating, arrested their flight; and, in spite of their usually roving and solitary habits, remained for several weeks engaged in devouring these creatures. "A single bird," says he, "would often swallow as many as ten of these caterpillars in a minute. If we, however, only calculate at the rate of two per minute to each bird during a day of sixteen hours (which are well utilised by the Cuckoo), 100 birds would have destroyed 192,000 caterpillars daily, or close upon *three millions* in the space of a fortnight! A palpable decrease of numbers among these pests was unmistakable; and, indeed, one was tempted to believe that the Cuckoos finished by consuming them all, for, after the last straggler had taken its departure, not a vestige of a caterpillar was to be seen."

"To give a proof of the services rendered by Titmice, Goldcrests, and small climbing birds," says Count Wodzicki, "I will relate some of my experiences on the subject. In the year 1848, every leaf in my garden was devoured by numberless caterpillars of that most destructive moth, *Bombyx dispar*, so that the trees looked as though they had been blighted. In the autumn I found millions of eggs attached to the stems and branches of my trees, contained in a hairy envelope. I had them removed by hand at a very great expense; but soon finding that human means were insufficient to rid me of the plague, I made up my mind that I must inevitably lose all my trees. Towards winter, however, numerous flocks of Titmice and Goldcrests made their appearance day after day; and, to my intense delight, I perceived a daily decrease in the ranks of the enemy. In the spring no less than twenty pairs of Titmice selected my garden as their breeding-place; whereas in other years I rarely ever found more than two or three nests. In 1849 the pest had sensibly diminished; and in 1850 I had the pleasure of seeing my trees so thoroughly purified by my little feathered gardeners, that through their instrumentality I again saw my orchard in full leaf the whole summer long. In the year 1842, I counted no less than two thousand plant-lice (*Aphidæ*) on three large rose-stocks in my green-house. I immediately introduced a Marsh Tit into the building; and in the course of a few hours every insect had disappeared."

My father always called the Woodpeckers, and other climbing birds, the "benefactors of the forest;" and strongly opposed the erroneous idea that these birds injure the timber by their operations. This is in nowise the case, for Woodpeckers never, by any chance, attack sound wood, but, on the contrary, seek out the sickly and decayed places, in which numerous insects breed. All well-informed foresters are agreed on this point. Ratzeburg, in his work on the 'Spoilers of Forests and their Enemies,' says distinctly: "Old hollow trees, as well as those covered with ivy and other creepers, should be allowed to stand, so as to afford nesting-places for birds."

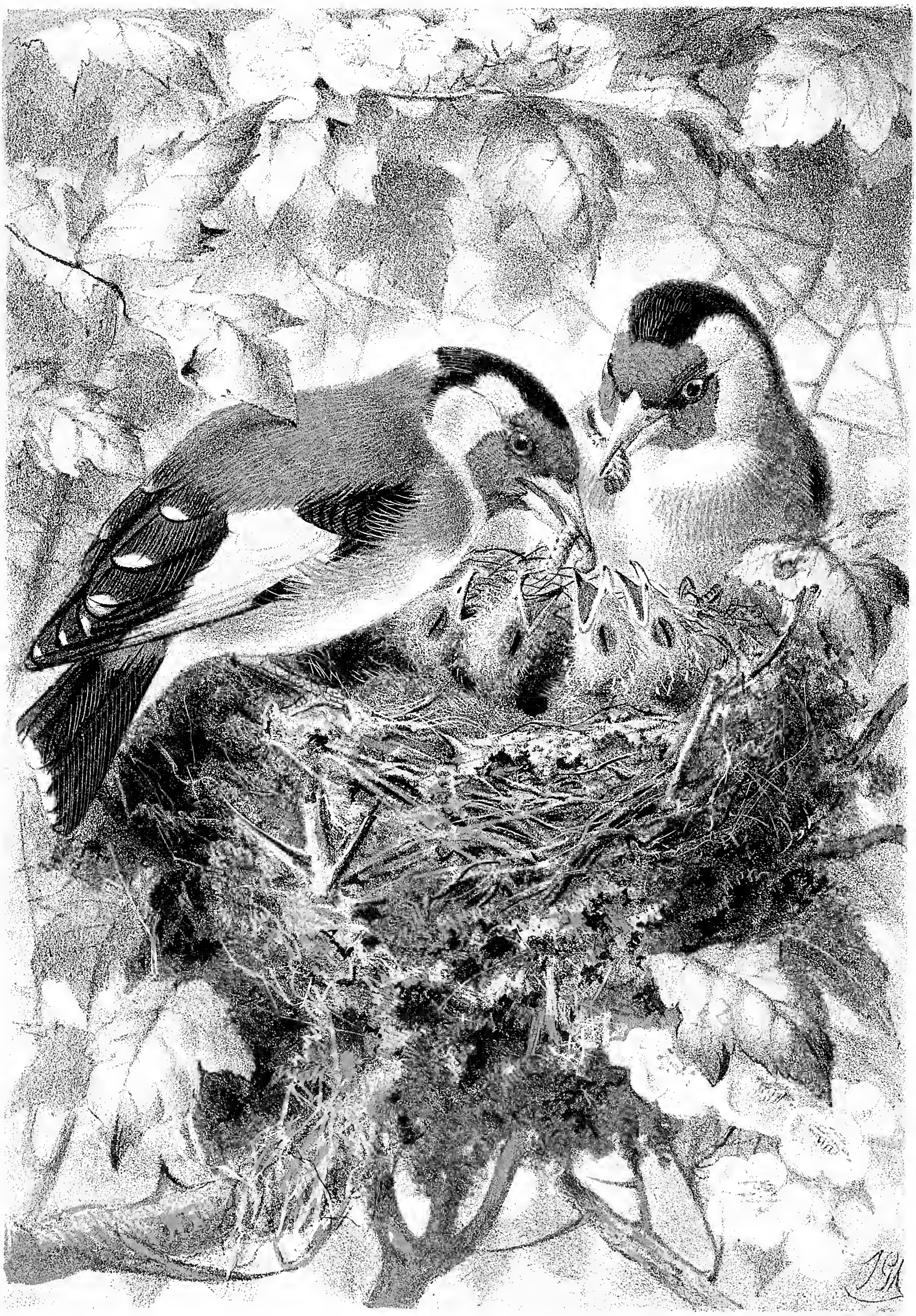
Undoubtedly, the equilibrium between the plant- and animal-world is maintained principally by the *Scansores:* Titmice, Goldcrests, and other insectivorous birds, are not the sole agents employed in this matter, for the *Corvidæ* are scarcely less useful, especially one member of the family,—the common Rook. This bird is the chief enemy of the cockchaffer, and in destroying untold numbers of this insect, as also snails, &c., does us no small service. Buzzards, Kestrels, and Owls, are not less instrumental in preserving to man those plants which are most necessary to his existence. These three creatures ought to be as sacred to us as the Ibis was to the Egyptians, for they are the most active and untiring adversaries of the universally destructive field-mouse. They all, in some way or another, contribute to the general service! A single Buzzard can devour some twenty field-mice in a forenoon, without any fear of an attack of indigestion; and a pair of these birds will, in the breeding-season, carry over a hundred of these little mammals to their young in a day. Owls and Kestrels are quite as useful in proportion to their size. One may rest assured that these birds will not be long before they find out and frequent a field over-run by these pests, and there carry out the work for which they were created. It is a veritable sin, a crime committed against agricultural interests, when the ignorant boor destroys them, and nails to his barn-door a crushing evidence of his folly and stupidity. In seasons when plagues of field-mice occur, these useful birds—they might almost be called angels—arrive, from whence no one can tell, and destroy them so long as one is to be found. The Snowy Owl has been known, from observation, to follow the Lemming, in its migration, for miles.

Of late years our attention has been attracted to another work, in which birds prove their utility to man. Not a few of them contribute greatly to keep down the over-growth of weeds. The farmer, who looks with a distrustful eye upon Woodpigeons, or, in the autumn, upon Buntings and Finches, when feeding in his fields, does them the greatest injustice. They more than counter-balance the little mischief they commit during the few days' seed-time. All Pigeons nourish both themselves and their young almost exclusively on the seeds of different weeds, namely, wild vetches, corn-flower, charlock, millet-grass, and others equally abhorred by the farmer. These birds cleanse the fields from noxious plants, in the same manner as those mentioned in the preceding paragraph keep the land clear of destructive animals.

It is not necessary to enumerate further examples to convince any reflecting individual that birds are indispensable directors of the balance of Nature; we need not recal to mind the utility of the various reptile- and carrion-feeding birds of southern lands. Their whole lives are passed in heaping benefits upon us, and all the other higher orders of animated Nature; everywhere, and at all times, they appear to be employed in destroying what is hurtful, or in checking or removing its influence. They are the real guardians of order and the highest natural laws; they faithfully fulfil their most important duty.

And how rarely is the work they accomplish recognized by man! Only too often, unfortunately, he ruthlessly, and I may say criminally, seeks to disturb Nature's equilibrium, which they are engaged in preserving. And what is the result? Inevitable ruin! The "Sparrow war," which was carried on in Prussia by the Government of our great king, was fearfully revenged. It cost the State, in the space of two years, many thousand thalers; and insect-vermin got the upper hand! "Frederick then wisely withdrew his hand from the tiller of Creation's harmonious work, where he thought he might meddle with impunity. He countermanded his orders, and was, moreover, obliged to *import* Sparrows, which were now preserved."

Now-a-days, war is no longer waged against the Sparrow, though a number of other highly useful birds are still subject to persecution. Without any reflection we destroy their breeding-places by wholesale; and the birds themselves are pursued, harried, and destroyed, in the most wicked manner possible, thus driving them to emigrate to happier regions. The result of such conduct is only too easily to be seen in the works written by the forest authorities, or may, without difficulty, be recognized in many other ways. Plagues of caterpillars are more frequent, and their devastations are more felt; mice are the victors in their wars with us. Why? Because both *had* ruthless enemies, which *we* have despised, and either destroyed or banished; and this brings its own punishment. Do not, however, let us despair! Matters are not quite so bad as they used to be; voices, both numerous and influential, are beginning to make themselves heard, begging, aye, even demanding, protection for birds. Ratzeburg's demands will be satisfied; and breeding-places will be constructed for our feathered friends. And every sensible person will at last concur in the call of all students of Nature: "*Protection for birds!*"



J G Keulemans lith. M & N Hanhart imp

FEEDING THE HUNGRY.

PART IV.

DOMESTIC AND SOCIAL LIFE.

CHAPTER I.

EVERY-DAY LIFE.

"Wir lustigen Bürger in grüner Stadt,
Wir singen und lärmen,
Arbeiten und Schwärmen
Vom Morgen zum Abend und werden satt."—Tieck.

No other animal understands the art of living so well as the bird, and no creature is so well up in housekeeping and domestic economy. The longest day is scarce long enough, and the shortest night might yet be curtailed, as far as the bird is concerned. It is ever wakeful, cheerful, and joyous, duly apportioning the time allotted to it. Conscious of its happy existence it appears to regard work as play, and its bright song as a most important labour. To this its first and last thoughts are directed; the happiest season of the year and the brightest time of the day is dedicated to it before everything else.

All birds wake early from their short sleep. Night's gloomy mantle hangs yet heavy over the land; and before she has half run her course the bonny bird, already fully rested, greets the day: earlier heralds than the rosy dawn itself, aye, earlier even than the faint gray light which precedes it. "There is an incomparable pleasure," says our Naumann, "in visiting the leafy coppice on a bright May morning quivering with bird-song. Each little throat vies with the other, and seeks to surpass it. Soon after twelve at night the Cuckoo opens the concert with its monotonous call, repeating the same a hundred times without moving from the spot. Then the Golden Oriole strikes up an accompaniment with its flute-like notes. With the very first glimpse of morning light the Pied Flycatcher and Redstart unite their melancholy strains, speedily followed by the melodious *allegro* of the Garden Warbler; the melting harmony of the Nightingale, queen of the night; the Thrush and Blackbird; and should there be a field close by we now hear the Skylark's rippling song. Dawn arrives at last, and with it all the remaining Warblers and Finches burst forth in one glorious chorus, their notes so intermingled as almost to defy distinction." In the pine forest the order is somewhat different. First, after the Cuckoo, we hear the lovely song of the Wood Lark, which Welcker calls the "Nightingale of the air;" then the blustering call of the Capercallie and the Blackcock; afterwards the Blackbird, Thrush, Redstart, and Robin, the Crows and Jays commence their orations; and then the Pigeons, Titmice, Goldcrests, Warblers, Nuthatches, and Woodpeckers; lastly, Finches, Buntings, Hedgesparrows, and others. They all sing their morning hymn fasting, only seeking their food after sunrise. Those who greet old Sol the earliest become silent at his appearance; the more slothful sing an hour and a half or two hours later on. Towards the termination of their song many already begin to feed, the Warblers especially, who will snap up an insect in the midst of a passionate outburst of melody. During the breeding season the first part of the morning is employed in building, and work is interspersed with song. After this time, however, a general silence prevails, except that here and there a few notes may be heard. The Warblers are now engaged with their breakfast.

Birds of prey circle at greater or less elevations over their hunting-grounds; Rooks, Crows, Jackdaws, Magpies, Jays, Buntings, Larks, Pipits, Thrushes, Blackbirds, Starlings, Pigeons, and Partridges, make their way to the fields and waste lands; Butcher-birds and Fly-catchers are on the look out from their favourite post or branch; Woodpeckers, Nuthatches, Tree-creepers, Titmice, and Goldcrests, are now climbing and hopping from twig to twig; and all the rest are seeking their daily bread in the field and in the wood, amongst the bushes, or along the banks of streams. Having received the same at the hand of rich and all-bounteous Nature, they, one and all, at certain fixed hours, fly off in search of the nearest water, and there drink their fill; this done they retire by degrees to some quiet spot, where they digest their food at leisure.

The mode of eating and drinking varies much. While most birds take their food with the beak, some—as, for instance, Parrots and birds of prey—use the feet as well; others, like the Woodpeckers and Honeysuckers (*Meliphaga*), employ the tongue for that purpose. The Parrots carry their food gracefully with one foot to the beak; birds of prey hold their quarry fast with both feet, while some Falcons carefully pluck off the feathers before they swallow it; many granivorous birds also remove the husk from the seed prior to eating it. Woodpeckers extract insects from crannies and crevices, transfixing them with their tongues, when both tongue and prey are drawn back into the bill; the Wryneck darts its tongue into an ant's nest, withdrawing it as soon as covered with these insects. Birds provided with wide gullets swallow large pieces, or even whole animals at once; thus, the Pelicans and Adjutants dispose with facility of fish over a foot long; the Lämmergeir does the same with large bones; Vultures also gorge immense pieces of flesh. Birds with smaller mouths take smaller pieces, as they find necessity. Others again, like the long-billed Waders, throw the pieces into the air with the end of their beaks, catching them as they fall in their widely-extended gape; and, lastly, some swallow with the assistance of the tongue, just as mammals do. The casting up of indigestible matter in the form of pellets is an operation necessitating great exertion, and is accompanied with such rolling of the eyes, and other gestures, as to betoken anything but comfort. An old Owl thus engaged is the cause of no small amusement to the looker-on: it twists and turns its head and eyes in every conceivable direction, hops from one foot to the other, straining spasmodically in its efforts to rid itself of the disagreeable morsel, and unmistakably evinces signs of anything but good humour under the infliction. Some birds preserve the remains of a meal, or lay up stores against the winter time. The Red-backed Shrike (*Lanius collurio*) spits beetles on thorns, and devours them when bad weather sets in; the Jay lays up acorns; the Nuthatch, nuts and beech-mast; one of the American Woodpeckers perforates entire aloe stems, wherein to secrete a store of hard fruits against winter time.

When drinking, some birds wade into the water, and, bending the head down, take a mouthful, then throw the head back, and allow the water to run down their throats. We see this exemplified every day with Geese and Fowls: others, like Swallows and flying Sea-birds, drink on the wing, taking a mouthful as they pass while gliding over the surface of the water; some, again, hover over the water and take a draught. I have seen the domestic Pigeon do this on the Nile. The solemn Vulture, when thirsty, paces up and down at the water's edge and drinks at intervals: Finches like to drink in company; they perch on the bushes nearest the water, dart down, take one sip of the precious liquid, and then return to their resting-place; these little flights are repeated until their thirst is satisfied. All true water-birds drink while swimming, and, be it remarked, salt water as well as fresh. These, along with carrion-, reptile-, fish-eating, and granivorous birds, appear to require a great deal of water. Insectivorous birds, on the contrary, drink but little; and Falcons, Eagles, and Owls, often remain for a long time without drinking at all. In general, birds seem to enjoy a good draught of water as much as we do a good glass of wine. At all events, they always appear thoroughly comfortable after having quenched their thirst. Indeed, the business of digestion usually begins with them immediately after drinking, and is a delightful state of "dolce far niente."

The meal finished, the bird (though always to be tempted by an attractive morsel) flies quietly to its resting-place; makes itself comfortable; preens its feathers; raises its wings; satisfies nature; sets itself up straight, sometimes on one leg only; shuts its eyes, either wholly or partially, and then quietly allows crop and stomach to do their work. To thoroughly understand the extreme luxury of rest after a meal one must observe the flesh- and grain-eating birds, whose food is first prepared in the crop for digestion. Ruminants only can enjoy such quiet pleasure, while languidly reclining during the hours of digestion. At this time the animal thinks of nothing, and does not even allow its personal safety to interfere with this important operation. Vultures, after gorging, forget themselves so far as to often allow themselves to be caught by the hand, and are often obliged to disgorge their food to regain their wits! Many Marsh- and Water-birds sleep during the operation; in short, every bird after feeding loses somewhat of its liveliness and activity; and thus we can account for the mid-day stillness of the forest.

In the middle of the afternoon this half-sleep is ended. The contents of the crop have, in due course, reached the stomach, and the bird now begins to think of renewing the supply. Most of the class feed again in the afternoon and evening; there are, however, many exceptions to this rule. While insectivorous birds keep on the feed as long as the sun is above the horizon, many granivorous birds are content with two principal meals a day; some, like the Vultures, Lämmergeirs, Falcons, &c., even with one, if it is a good one. The Cranes of the Soudan only visit the grain crops once early in the morning, always returning, however, with their crops filled to the throat; they then retire to the islands in the river to digest. Vultures generally feed about noon, the hottest time of the day. If the weather be bad, or is such as makes it either unfavourable or impossible for birds to seek their food, their conduct is entirely altered, that is to say with most species. Their demeanour is a faithful reflection of the sky above: when the heavens are bright, the bird is the same; if the weather is changeable or the sky becomes overcast, the bird is likewise sad and restless. On cold, rainy days the labour of seeking their nourishment calls for all their activity. In such weather we hear no song, and the bird's every action is uncertain and restless; added to which, a singular shyness of man or animals may be observed in all their actions. The sportsman can always approach birds much closer in fine sunny weather than when it is dull and windy, the only exception being in heavy drifting storms of rain or snow, when they seem obliged, against their will, to allow anything and everything to pass over them; on such occasions they sometimes lie so close as to allow themselves to be taken by the hand. Under such circumstances they will not even seek for food. Enough, however, on this subject; let us still further examine the bird's daily life in more favourable weather.

In the afternoon a highly important operation is alluded to, namely, that of the toilet. I have already mentioned the almost universal cleanliness of birds in their habits; the following species may, however, perhaps be regarded as exceptions to the general rule: Woodpeckers smear themselves with gum and turpentine; Tree-creepers dirty their plumage against wet limbs of trees; Vultures are, for a short time, soiled with blood and filth; and the legs of the Marabou Storks are coated in a similar manner. But cleanliness calls for much care and trouble, and, indeed, few minutes are allowed to pass without the bird preening and cleaning itself. Besides this it regularly makes its entire toilet once a day, and takes a bath, either a wet or dry one. The dry bath, which consists of paddling in sand or dust, supplies the place of a wet one, in the case of most, if not all, land-birds, and is a capital defence against the attacks of vermin. Our domestic Fowls, as well as all other members of the Gallinaceous order, only make use of the first of these baths, and afford us ample opportunity for observing this method of cleansing themselves. Under thick bushes, in dusty cart-sheds, or, indeed, in any sandy or dusty spot, we find places where they indulge in basking and dusting, and these are rarely without visitants at the proper hour. The bathers lie either with the whole or half the body embedded in the sand, and, by rapidly flapping their wings, raise a cloud of dust, when they open out their feathers, so as to allow of the loose particles finding their way between them. The feet are also sometimes used to throw dust over the body, but by whichever method the operation is performed the whole body is thoroughly and effectively dusted. This performance appears to afford birds the greatest pleasure; they will often remain for half an hour or more in their basking places, and sometimes for many minutes perfectly motionless. The bath over, they get on their legs again, shake their feathers, flap their wings, scratch themselves with their feet, and re-arrange their feathers with the beak. Winter snow supplies the place of dust. Some birds—take, for example, Finches and Sparrows—bathe in water as well as sand; the sole use of the sand-bath being to destroy the parasites with which birds are often infested.

The water-bath is taken in a variety of ways. Many species bathe frequently, others less often; some just sprinkle their plumage, while others wet themselves so thoroughly as to be scarcely capable of flying after the bath is finished. Land birds select a gently shelving place when they enter the water, and by fluttering their wings envelope themselves in a thick cloud of spray; they also hastily dip some of their feathers in the water itself. With aquatic birds washing takes place in the water itself.

After the bath the toilet begins. The land bird flies for this purpose to the nearest tree, shakes the worst of the water off, and then wrings out, as it were, each feather, by passing it between the mandibles; lastly, the feathers are laid in order, and then greased with oil from the glands at the root of the tail. The last operation is much more important for the aquatic than the land bird, and is, therefore, much more carefully performed by the former than the latter. In spite of the perfect construction and adaptation of the feathers, they become wetted after either long swimming or repeated diving, and must, on this account, be re-dressed, so as to prepare them for further work; thus, aquatic birds re-arrange their plumage several times in the course of the day, and this they do partly while swimming, but principally ashore. Every water bird on landing stands straight up and shakes off all the water from its feathers that it possibly can by flapping its wings and by a convulsive movement of the skin; after this the bird ruffles its feathers with its beak, and then gives another shake; this is repeated until the plumage appears sufficiently dry. The feathers which cover the oil-glands are now erected, and the oil secreted there is extracted by pressure from the beak, and carried on both the inside and outside of the lower mandible. Now, each feather in want of lubrication is drawn singly through the beak, and is at the same time smoothed and laid in its place. The extreme mobility of the bird's neck enables it to grease every feather of its body with the greatest facility, except those of the head and upper part of the neck; these are, however, rubbed against the already impregnated feathers of the breast, wings, and lower part of the neck, until they have become sufficiently oiled. The wing- and breast-feathers are always treated with extraordinary care, not less so, however, than the highly important tail-feathers, and with these last the whole performance is generally ended.

After a good cleaning and a bath, a bird always seems especially comfortable. The means of cleaning itself are to a bird a veritable necessity, for without them it sickens. However carefully the bird avoids water on other occasions, especially rain, it is ever eager for its bath.* When the toilet is ended it likes to dream away a half-hour or so in the full enjoyment of internal and external warmth. With this object we often see the following birds lying on on their sides or on their bellies sunning themselves,—Vultures, Starlings, Pigeons, Partridges, Ibises and others; some, like the Cormorants and Darters, range themselves in rows along a sunny ledge of rock or some place similarly situated, fanning, with their wings expanded. This slight tremulous movement which one may observe in this position denotes the perfection of comfort.

Many species spend a certain portion of the day in the society of their friends. The greater number of those birds which live in pairs like to meet together for a time, though not, or at all events less frequently, during the breeding season, when household duties allow but little time for such indulgence. Many, take for instance the Raven, pay one another regular visits. Each pair of these splendid and cunning creatures, like most other birds of solitary dispositions, live in a certain circle, within which no other pair is allowed to venture; after meal times, however, neighbours visit for an hour, chattering and playing,—that is to say, flying about together in beautiful heliciform gyrations,—and then each pair returns to its special domain. Royston Crows, Carrion Crows,* Rooks, Vultures, Kites, Starlings and other sociable birds, usually meet together towards evening, for a "palaver," before retiring to roost. The new arrivals are received by the company already assembled with loud cries, and even grotesque postures and bows: the latter I have often observed among Balearic Cranes (*Balearica pavonina*) in Africa. It is a most comical sight to see a flock of these proud and beautiful birds greeted by another flock flying towards it; its approach is eagerly watched, and every call of those on the wing is answered with loud invitations: if these appear to be accepted, they almost one and all express their satisfaction by singular movements, which can only be compared to dancing; they then run to meet their visitors and commence a friendly chat. Many species fly towards those approaching, and all, in some way or another, find means to express their pleasure at seeing them.

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* Marsh- and aquatic birds excepted, I only know of the following deviation from this rule:—Swallows, which like to hunt in the rain; Pigeons and Sand Grouse, which often lie out in it; and Parrots, which delight to sit out on bare branches to be rained upon.—*Author.*

When one of these meetings takes place with a view of mutually assembling before going to roost, it lasts somewhat longer than usual. Male song-birds pass the time by singing one against the other, competition in this noble art being carried to the highest possible pitch. Those which cannot sing utter a note or two and amuse themselves by preening their feathers. Every minute the flock increases, birds arriving singly or in pairs from all directions. They each evidently know before coming the place of meeting; it is easy to see this by observing the unerring line of flight taken by those coming from a distance. High or isolated trees, or detached clusters,

* With regard to the Carrion Crow, the author must be mistaken.—*W. J.*

uncultivated fields, islands and caverns, are the places usually selected for such meetings, and are always carefully sought after. Many song-birds are so fond of them as to visit them during the breeding season while their mates are sitting; they then return home, as in duty bound, not roosting in company, as is their usual wont.

After all the members of the assembly have met together, preparations are made for going to bed. Harmless birds, alone, break up the meeting and retire to rest without further ceremony. All cautious species first thoroughly examine the locality by means of spies, and await their report before quitting the place of assembly. Crows and Cranes, the most cunning birds I know, after having once been disturbed, are not always satisfied with the report brought in, but require its further confirmation by some of the more experienced males. Once thoroughly satisfied of their safety, the whole company suddenly rises with a loud cry (which, however, never lasts long), and flies noiselessly and silently to the sleeping-place. Those birds only which roost on islands and lakes, or in marshes or thick trees, and are careless in their habits, ever chatter or make much noise long after reaching the sleeping-place; some of these, however, do make a fearful noise.

Sparrows when retiring to roost always quarrel among themselves before matters are finally arranged. In a well-frequented marsh the various noises, screams, quacking, snapping, whistling, twittering, drumming, croaking, and screeching, &c., are perfectly deafening, and continue far into the night; silence being only gradually restored, screams and croakings drop to a low murmur, one voice after another becomes silent, and by midnight one and all are fast asleep. Young birds are regularly "put to bed," if we may use the term, by their parents. "I shall never forget a Swallow," says Sigismund, "who, when the nest was too small for her growing family, used to roost in an elder-tree before my window. Every evening she mustered her children, pointed out their place for the night, and gave them all a good lecture before going to sleep; she appeared to count them over and over again, and did not close an eye until the little folk were fast asleep. In the morning a joyous glance from their mother awaited them; she was always the first to awake and inspect her family; one little head after another popped out from under the wing, opening its pretty black eyes; some, tweaked suddenly by their brothers and sisters, could not waken quite quick enough, the eyelid dropped again and again over the heavy eye, making the little creature remind one of a drowsy child struggling against sleep."

All birds require but little rest, and sleep lightly; yet to some a certain continuous movement is necessary. Those birds which roost in trees and on the ground need have no dread of falling; those, however, sleeping on the water have to fear drifting ashore. They must, then, keep themselves stationary by an unconscious and regular movement of the feet, so as not to be driven from the spot by wind and wave. Birds roosting on trees always sleep with their tarsi much bent; some stand on one leg, like many running and aquatic birds, the other being drawn up and hidden among the feathers of the breast, and the head deeply buried in those of the back. The Goatsuckers only sleep with their bodies along, instead of across, large limbs of trees, and being diurnal sleepers this habit tends greatly to their safety. Birds that breed in holes mostly roost in hollow trees. I once knew a green Woodpecker which, in the absence of the proper tenants, used to roost regularly in a little house in my father's garden, built for the Starlings. Some Waders sleep resting on the tarsi, others standing on both feet, either in or close to the water; some lie flat on their bellies. Nocturnal birds, which sleep in the day-time, always choose the most retired spots wherein to take their rest, and while sleeping seek to nestle close up to the nearest object.

Birds, like most other creatures, dislike very much to have their rest disturbed, and most of them raise a loud cry and take wing, but do not trust themselves far away, alighting again almost immediately, and often returning to the same place. Cautious or distrustful birds do not go to sleep again, but wander about restlessly during the rest of the night. Birds suddenly awakened appear as if drunk, and tumble about unconsciously in all directions. Some species come to their senses very quickly, and then usually manage to escape the threatened danger.

There is no doubt that birds dream, as may be remarked by observing those kept in cages. From their conduct one may in some measure gather what they are dreaming about. A bird which flutters in its sleep during the season of migration is, doubtless, dreaming of distant lands, and a wish to migrate; one softly twittering in the spring time, dreams of love and song; what they may be dreaming of at other times I cannot say, though probably the god of dreams is weaving bright pictures of flies and insects, singing and love, life and happiness, which possibly may fall to their lot on the morrow.

CHAPTER II.

COURTSHIP AND MARRIAGE.

"Hear how the bushes echo! by my life,
These birds have joyful thoughts. Think you they sing
Like poets from the vanity of song?
Or have they any sense of what they sing?
And would they praise the heavens for what they have?
And I made answer, 'Were there nothing else
For which to praise the heavens but only love,
That only love were cause enough for praise.'"
TENNYSON.

BIRDS, less restricted than man, yield to the seasons as they come round. As these change, and the year commences, passes on, and closes, so they do the like. Of birds, one may say they blossom with the spring, bear fruit in summer, hide themselves and their young in autumn, and rest or mourn through the gloomy winter. Spring is to them the merriest, most beautiful, and happiest time of their lives; decked in their brightest garb, to which dry science, even, gives the name of "nuptial plumage," they return, joyously singing, to the old haunts they quitted the previous autumn, or seek to found a home. First, however, as in the chivalrous days of old, comes many a gallant tilting match, both in the air and on the greensward, to win the "fair one's" approbation; for, even among birds, bliss is not obtained without a struggle. It is not every bird that has the good fortune to win a mate; many a one is condemned to single blessedness. With them the males are more numerous than the females. It seems as though Nature sought to provide against disaster, in that the males exceed the females in number. The surplus males roam homeless about the country, ever ready to break a lance in honour of the "fair sex," possibly on the chance of having a widow to console.

Observation has taught us, that in the case of a male bird being destroyed his loss is replaced in an incredibly short space of time. A pair of Magpies once wished to settle in a tall oak which over-shadowed our garden, and began to build their nest. Now, while my father was alive, this garden was a safe asylum for all harmless birds who sought refuge there, and had been, from time immemorial, strictly guarded by my father and by us brothers from all feathered rogues and vagabonds. It was evident that in a very short time these Magpies would soon harry and despoil all our pretty Warblers, and, on this account, it was impossible for us to hold out to them the hand of good-fellowship and hospitality: so we erected a screen of boughs beneath the oak tree, under which, gun in hand, we laid wait for the interlopers. By seven in the morning we had shot the male bird. Scarcely two hours had elapsed before the widow changed her condition, and took unto herself another mate. An hour later and he was disposed of. By eleven o'clock, however, his place was re-filled. This last male would, in all probability, have shared the fate of his predecessors, had not the frightened female preferred emigrating with husband No. 3 to running any further risk.

A correspondent of ours shot a Hen Harrier (*Circus* *cyaneus*) at the nest one day, a bird which is nowhere very common: within forty-eight hours he shot two other males, and would, in all probability, have killed a third, had he not shot the female on the following day. One spring morning my father shot the male of a pair of Partridges; the hen bird flew a short distance, and then alighted. Instantly another male appeared by her side, and seemed to take up with the widow, for a few minutes later we might have killed them both at one shot.

The female is not so soon replaced as the male; often, indeed, not for a whole year. Of this I will give an example, which came under my father's own observation. He killed the female of a pair of Gray Wagtails (*Motacilla sulphurea*), without being able to obtain the male; the latter scoured the surrounding country with loud cries to seek a fresh mate. His search, however, was fruitless; and thus he was forced to remain single.

From the above anecdote we may infer that among birds there are, in fact, more males than females; and we will produce further evidence in support of this assumption. Every housekeeper, who has charge of the fowl yard, knows that out of a brood of chickens there are always more males than females. Another striking proof, in favour of the assertion made as to the predominance of one sex over another, is the fighting that takes place among the males for the favours of the hen bird. All sportsmen look upon it as a crime to kill a hen Partridge in spring, though they unhesitatingly shoot the cock bird: "there are plenty of them," they say; and they are right. The hens are always soon mated afresh.*

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* It must be borne in mind that the sporting usages mentioned in the work are not always in accordance with those of this country.—*W. J.*

Every observer of the habits of birds must remark with what winning ways, solicitude, and passion, the male woos his mate. During pairing time the bird is bodily and intellectually a different being from what it is the rest of the year. Its body is not only graced with a wedding garment, but its intellect is perceptibly strengthened; its whole being more lively, and every gift more enhanced. Each species has its own peculiar way of pleasing the female, and of winning her love, by either tenderness or force. Eagles, Peregrines, Falcons, Harriers, Buzzards, and Kestrels, play around their mistress for hours together in the air, using every grace to win her approbation; the other Falcons and Owls call loudly after the female; the Goatsucker strikes its wings together with a clacking sound, while encircling the chosen one with rapid turns, uttering at the same time its cry of "hate, hate," which one never hears on any other occasion, repeating it with unsubdued energy; Swifts and Swallows tumble about in the air in company with their mates, calling them oft and loudly, and the first lavishes upon his love songs without number; the Bee-eater displays all his powers of flight before his partner's eyes, as the latter sits perched on the end of some branch or twig, returning to her side every now and then brimful of tenderness. The flight of many birds is of itself peculiar during the breeding season, doubtless with a view of expressing their feelings. Thus, both wild and tame Pigeons adopt a special style of flight at this season of the year, flapping their wings, rising high in the air, circling round and round, and then descending again in a slanting direction; Greenfinches, Goldfinches, Corn Buntings, Larks, and others, flutter along the ground in front of the hen bird in a most extraordinary manner, as though they could not fly; the Serin Finch (*Serinus hortensis*) imitates the flight of the Bat, by way of ingratiating itself; others again, as the Tree Pipit, Garden Warbler, and Wood Wren, rise high in the air like Wood Pigeons, singing the while, and descending in an oblique line to the ground; the Snipe rises to a great height and darts down again to its mate with a singular sound, which we call "drumming;" Lapwings and Sandpipers drive the female before them; Ducks and Geese rush around them on the surface of the water, and Grebes and Divers beneath as well as upon it. In short, every bird has its own peculiar movements in the pairing season, and these are all, more or less, for the entertainment of the female.

It is really delightful to see the pretty steps which some males go through before the females. In the spring one may see ballet-dancing of this description performed by Water Wagtails on the ridge of a roof, or along the banks of the smallest streamlet. The male, as is well known, accompanies his mate the whole year round. In the month of April, however, he never leaves her for a moment; he follows every flight, and each footstep, even, with jealous care. When pairing time arrives he circles round his mate with graceful movements, giving utterance at the same time to a tender and oft-repeated trembling note; the head is somewhat lowered, the wings extended, and the tail, which is drooped, also; he trips it lightly, moving his pinions tremulously, making obeisance, and approaching and retiring before his spouse, or bride elect, until she accepts this declaration of love, and crowns the lover's wishes with caresses. Gray Wagtails act in a similar manner. The Pigeon, also,—whose soft billing and cooing has furnished the ancient ballad writers of the East with material for many poetic effusions purporting to illustrate the love-passages, sighs and longings, of the human race,—dances round his partner; aye, both, even, will waltz together as tenderly as lad and lassie, beak to beak, and pressed tenderly to one another's breast!

The most peculiar of these amatory performances are those executed by various members of the Gallinaceous family. Most members of this class have very luxurious and extravagant notions on the subject of marriage; and even those who live in the bonds of matrimony are sometimes given to breaking their plighted faith! Hence often the mad lust and wild jealousy shown in their contact with the female. The "play" of the Capercallie gives us an example of a love-suit, as conducted by some members of the family.

This "play"* is the combination of a love-dance, love-song, and declaration of the tender passion, all in one. It commences at the earliest about the end of March, and continues in the high-lands, where it commences later, up to the middle of May. Inasmuch as the Capercallie is a great favourite with sportsmen, and as the pursuit of this bird, during "playing-time," is a sport which affords the greatest pleasure, and at the same time requires much skill, it follows that this "play" is thoroughly well known, and the different notes and movements have not only their especial names, but are sought to be rendered by syllables. A short description of this singular performance is much as follows. The evening before commencing operations the Capercallie goes to the "playing-place," and perches on the chosen tree, which is generally a larch or fir, as the slippery bark of the beech tree is not so well adapted for dancing on as the former. Immediately after shaking his feathers, which operation is accompanied with no little noise, the bird remains silent, listening with the greatest attention to hear if all is quiet in the forest; if the contrary is the case it immediately flies down again. After an interval of some minutes, during which time the Capercallie has remained perfectly motionless, one may remark a repeated movement in the throat, as though the bird wanted to throw something up, or was near choking; with this a curious sound is heard, which the hunter calls "retching" or "cramming,"* and which Bechstein compares to the grunting of a pig. The sportsman always considers this as an unfailing sign that the bird will "play" the next morning.

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* I have rendered the German "Balze" by "play," Mr. Lloyd's English equivalent as found in Yarrell's 'British Birds,' vol. ii. p. 291.—*W. J.*

Long before sunrise, generally about three in the morning, the "playing" commences by the bird emitting a snapping or smacking sound, "from which time," says my good friend Geyer, in his capital little brochure on 'The "play" of the Capercallie,' "the interest and attention of the hunter rises until he hears the first real note, which is veritable music to many, and quickens the pulse of every lover of the sport. It resembles the syllable, '*teud;*' then follows, 'teud, teud, teud, teud;' and at last, 'teud, eud, eud, eud, eud,' &c., increasing in rapidity until the principal note is reached, which is not unlike 'glak;' this is louder than all the preceding. Then the 'grinding,' 'whetting,' and 'playing,' begins, which is also called 'stanza- or verse-making,' † a sound which, in spite of every essay, no mortal being has ever been able to imitate, wholly or even partially, and probably never will. This sound lasts about from three and a half to four seconds: it somewhat resembles the whetting of a scythe, and may be, in a way, expressed by the word 'hide, hide, hide, hide, hide, hide, hide, hide-er-i.' During this 'playing' the bird is usually seen perched on some prominent or withered branch, with drooping and trembling wings, ruffled feathers, raised and out-spread tail; in short, it much resembles an angry Turkey-cock: the neck is outstretched, the head and eyes turned upwards and in continuous movement. At the same time the bird generally walks up and down the branch, often evacuates, and treads a number of small branches to pieces; in fact, the creature seems to be in a mesmeric state, which renders it totally unconscious of all that is going on in the outer world; so much so, indeed, that if shot at and clean missed, while in this state, it continues 'playing,' and remains quite undisturbed by either the flash or report."

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* "Worgen" or "Krüpfen;" terms used by the hunter to express this particular sound.—*W. J.*

† German: "Schleifen," "Wetzen," "Einspielen."—*W. J.*

This "play" lasts till soon after sunrise, when the bird quits his perch, and pays his addresses to his wives, who have, doubtless, been listening with great gratification to his serenade, acknowledging the same by their soft call of "bac, bac." With these he passes the morning amid caresses, like a sultan in his harem.

Other Gallinaceous birds "play" as well as the Cock of the wood. The domestic Fowl need not take so much trouble to win the affections of his seraglio. A civilized life has, in some way, done away with the necessity of such a complicated mode of courtship as the above. It suffices for him to crow, and thus assert himself lord of all he surveys, The bullying, cross-grained conduct of the Turkey-cock is too well known to render any description on my part necessary. The postures of this bird are not nearly so graceful as those of the Peacock, who offers his spouse the most brilliant homage, covering her as with a canopy, with his outspread train. The Hazel Hen, Partridge, and Ptarmigan, also "play;" and the last mentioned does so in the most charming manner.

Amongst the remaining birds, whose mode of courtship consists of similar dancing postures, the "Cock of the Rock" (*Rupicola crocea*) may probably rank the first; indeed, this gorgeous bird, an inhabitant of North Brazil and Guiana, most likely gains the appellation of "Cock" from its terpsichorean talent. Robert Schomburgh gives a very clear description of its dance, as follows:—

"While traversing the mountains of western Guiana we fell in with a pack of these splendid birds, which gave me the opportunity of being an eye-witness of their dancing, an accomplishment of which we had heard a great deal from the Indians, and which I had hitherto regarded as a fable. We cautiously approached their ballet-ground and place of meeting, which lay some little distance from the road. The stage, if we may so call it, measured from four to five feet in diameter; every blade of grass had been removed, and the ground was as smooth as if levelled by human hands. On this space we saw one of the birds dance and jump about, while the others evidently played the part of admiring spectators. At one moment it expanded the wings, threw its head in the air, or spread out its tail like a Peacock, scratching the ground with its feet; all this took place with a sort of hopping gait, until tired, when, on emitting a peculiar note, its place was immediately filled by another performer. In this manner three different birds went through their terpsichorean exercises, each proudly retiring in turn to its place amongst the spectators, who had settled on the low bushes near the theatre of operations. We counted ten males and two females in the flock. The noise caused by my inadvertently treading on a stick, unfortunately raised an alarm, when the whole company of dancers immediately flew off!

"The Indians, who place great value on their beautiful skins, eagerly seek out these 'playing-grounds,' and, armed with their blow-tubes and poisoned arrows, lie in wait for the dancers. The hunter does not attempt to use his weapon until the company is quite engrossed in the performance, when the birds become so preoccupied with their amusement, that four or five are often killed before the survivors detect the danger and decamp."

Just as energetic, though, possibly, not such accomplished performers, are to be found among other families. All Cranes practise the noble art with great enthusiasm. The Balearic Crane performs a very elegant "pas seul" before his mistress in pairing time. This bird, it is true, moves also at other times with a springing, dancing step, when it sees anything that particularly pleases it; this step does not, however, bear comparison with its "play." The Bower Bird of Australia (*Ptilonorhynchus holosericeus*) constructs the most ingenious arbours amid the long grass, wherein to dance before his spouse, an honour he pays her even when she is sitting on her nest, which is situated at the further end of the passage. The sociable and intelligent Ibis seats himself on his tarsi before the object of his affections, and "pops the question" amid a profusion of bows and chattering. The Snipe skims in circles around his lady-love, uttering the while a low, soft cry, and then trips to and fro before her in the prettiest manner imaginable. Courting is not, however, carried on by means of these movements solely, but also with the assistance of sounds, aye, very words! easily to be understood. The song of every bird is, in truth, an outburst of feeling, a passionate poem—the soul of wooing; and the words of the poet—

> "Oh, would'st thou seek the nightingales,
> Whose tuneful melody charm'd thee,
> In the bright happy days of spring?—
> *Wooing* they sang—now they sing no more!"

express the truth; for with the growth of parental cares the love-song wears away. The conduct of the male while singing, and that of the hen bird, to whom he pays his addresses, are proofs that the song of the first solicits the love of the latter. The male calls the loved one to his side, entertaining her with his melody, and with it, also, he sets other females of his species by the ears! In the breeding season song is a weapon: the bird conquers and is conquered by it. It would take too much space were I to describe the behaviour of singing birds more in detail. I need only remind my readers that birds animate one another by the agency of song; that many species only sing, or, what is equivalent to it, let their notes be heard, during the breeding time; that others, again, emit peculiar notes at that season, which are never heard at other times; and that some species make curious sounds and noises instead of notes. The Cuckoo is one of these, becoming silent after pairing time. Grebes, Jays, Magpies, Crows, Ravens, and others, also have their peculiar love-notes; to this class belong the Stork, Adjutant, Glossy Ibis, and Pelican, which make a snapping noise with their bills; as well as the Woodpecker, who drums away on some dead branch with the same instrument, so loudly, indeed, that the noise can be heard more than half a mile off. The Bittern, to which we have already alluded, must be mentioned here, as it renders its cry more powerful by immersing its beak in the water.

Though the female receives the addresses of the male without the slightest pretence at coyness, but rather, on the contrary, if she has lost her spouse, accepts the next best who may turn up; yet the latter has to win many a hard-fought battle before he can enjoy peace and quietness in company with the "fair one." I say "fair one," but am obliged to confess that from all the reliable information we can gather on the subject of bird-life the term can only be used in a qualified sense; for the flattering or, at least, complimentary appellation of "fair sex," cannot, with justice, well be applied to female birds, and, what is more, it is a recognized fact that, for the most part, the cock bird is handsomer than the hen. Nevertheless, I doubt not that in the eyes of a gallant male a well-grown hen bird is quite as beautiful as is a pretty girl to one of us; and possibly he may think more amiable, also. In the married life of birds the hen plays quite a passive part, *vis-a-vis* of her partner, who, from the very beginning, assumes the position of lord and master. Every female—if there be rival aspirants, and they are rarely wanting—is won by hard fighting, and accords her love right willingly to the conqueror. This engenders the unbounded jealousy which exists between birds of the same species; and, as there are more males than females, it is clear that this passion is stronger among the former than it is with the latter.

It is highly improbable that any bird-marriage is ever consummated without many a jealous fight taking place. If we cannot prove this, one thing we do know, and that is, that during the breeding season which shortly follows the migration, old bachelors and forlorn widowers, both alike eager to enter the bonds of wedlock, will stroll within the beat of some happy couple, and are ready at any time to break a lance with the spouse for the possession of his good lady. Every male bird, no matter how timid he may appear by nature, shows the highest courage against one of his own species, and fights like a hero for his mistress. The beak, spurred tarsi, and, in some cases, even spurred wings, are the weapons used in these encounters, and it is not uncommon, although the combatants are so equally armed, that the fight ends fatally.

Any intruder upon the beat of a pair is immediately, and without any challenge, either forthwith driven off by the male, or forced to fight. According to the class of the combatants the arena selected is either land, air, or water. It also sometimes happens that the three realms combined serve as battle-field. The Eagle, and all members of that family, even to the smallest Hawk, fight in the air, using both beak and claws. Wonderful evolutions, grapplings quick as thought and brilliant parries, a bold pursuit on one side, and an equally determined resistance on the other, are the striking features of such combats, which afford a magnificent spectacle to the looker-on, though unable to watch the battle from so close a distance as the attendant Rooks, those noisy spectators who, owing to their powers of flight, are enabled on all sides to follow the struggling champions wherever they go. If the royal combatants can seize one another, the grasp is always mutual; they twine together and, unable to use their wings, descend with a rush, tumbling head over heels to the earth. The moment they touch the ground they let go; but, as soon as they can rise again in the air, the fight begins afresh and with renewed vigour. After a long bout the weakest gives in and retires, followed by the conqueror till driven off the beat. In spite of defeat, however, the beaten one does not at once give up the struggle entirely. This often lasts for days, aye, even for weeks together; and it is only after repeated victories that the winner can enjoy his rights. A fatal ending to the fray, however, occurs but seldom with heroes so used to battle.

We may often witness similar fights on a smaller scale. What a disturbance, for instance, rival males of the common Swift (*Cypselus apus*) make when chasing one another. These birds, like Eagles and Falcons, will seize each other in mid-air and fall to the ground; indeed, they fight so persistently that one of the two sometimes expires from the effects of the struggle. We have, probably, all witnessed, more than once, Starlings, Sparrows, Finches, Yellow-hammers, Redstarts, and Water Wagtails, fighting for their mates. Some of us have, doubtless, amused ourselves catching Finches in the following manner: by tying across the back of a cock Chaffinch a lime twig to its wings, and placing the fettered bird on the ground near a wild one in the act of singing, the latter then immediately dashes at the intruder, and is caught by the bird-lime; thus falling a victim to its unbounded jealousy. In short, all birds are alike slaves to this passion.

The domestic Cock is jealous in the extreme. One is often amused by seeing young Cockerels have a set-to long before they are furnished with either comb or spurs; if one should crow the challenge is immediately accepted. In England,* Spain and Southern Asia, however, "Cock-fighting" is a national sport, and a cruel and barbarous one too, for in this case the spurs are either sharpened or shod with a steel point or false spur, and the back and belly almost denuded of feathers, so that the issue of the battle may be more deadly; and indeed the pugnacity of the combatants is such that neither will yield but with his last breath. We cannot really say whether this blind fury is to be ascribed to the influence of jealousy in love affairs, and yet it seems as though it must be so, for the poet's stanza runs thus:

> "The tilt-yard is the threshing floor:
> On a throne of straw and chaff
> Sits the pretty speckled hen,
> Judging between the combatants.
> Ah, friends, it is her modest cackle,
> Her dainty bashful tripping,
> Her favor too, the guerdon
> Which sets these rivals by the ears."

And he is right, though it is singular that domestic fowls, which are polygamists, and always have a troop of hens at their heels, should be such slaves to jealousy; though, by the way, Turks, among men, are just as bad!

The naval engagements fought on Love's behalf are no less amusing than the above, and those of the domestic Duck may be often witnessed. When in the spring time two Drakes are chasing a Duck, she flies before them as though bashful, and dives, but soon returns swimming with outstretched wings, half under and half on the surface of the water; and she is still eagerly pursued by both Drakes, until jealousy, more powerful even than love, sets them fighting. It is very pretty to watch Moorhens racing over the top of the water towards one another and attacking each other in a most determined manner with their feet. Grebes, Cormorants, Geese, Pelicans, all fight with pluck and temerity.

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* I trust Dr. Brehm is aware that this barbarous amusement is illegal in this country, and has long since gone out of fashion: with the exception of an occasional "main" being fought clandestinely, this pastime has entirely disappeared from among us.—*W. J.*

Many birds entirely loose their usual caution and shyness during pairing time, and thus fall an easy prey to the hunter. One of our poets, while painting the follies of the Capercallie and their fatal results, reads us a good lesson at the same time.

> "The cock of the wood courts his mates in the forest gay
> While strutting in ecstacy upon a fir branch high,
> And marks not the hunter's stealthy tread;
> Many thousands thus alas are caught,
> And losing Love and life as well
> Decsend to Pluto's murky realms below."

Unfortunately Capercallies are not the sole victims of the female sex! Any sportsman who can imitate the Cuckoo's call may decoy the bird on to the same tree under which he is standing, and thus, at his leisure, be enabled to observe the jealous creature, with outspread tail, hanging wings, and ruffled feathers, looking eagerly around to wreak vengeance on its rival, repeating its cry in the most vehement manner. The Wood Pigeon and Turtle Dove will also come to call in like manner. The shy Golden Oriole may be decoyed by a good imitation of its melodious whistle; as also the Pied Woodpecker, by tapping either the stock of one's gun, or the dry limb of a tree, with a knife-handle or small stone. There are many other birds besides, whose natural jealousy is utilized by the sportsman.

Thus, after repeated and continued battles, the marriage takes place. It is the truest of all such contracts, for naught but death can break the bond. Real genuine marriage can only be found among birds.

We often read anecdotes of the great affection shown by male mammals to their young; showing that their care is fatherly in the extreme, and their defence of their offspring courageous to an extent that is perfectly marvellous. These stories, however, are, as we well know, for the most part little else than fables of the imagination; our experiences of male quadrupeds go to prove quite the contrary, namely, that they rather forsake their young, or, at all events, do not trouble themselves much about their progeny, but leave it to the tender care of the females, who show themselves equal to the duty, and worthy of it too.

With many creatures, even among the vertebrate animals, namely, reptiles and fishes, as also among invertebrates, there are striking exceptions to this rule: take, for example, in the latter class, bees, wasps, hornets, bumble-bees, sawflies, and others, in which case the mothers are exempted from all care and anxiety on account of their offspring.

Most birds when they pair, do so for good and all until either one or the other dies, with the exception of those belonging to the Gallinaceous family, such as Wood Grouse, domestic Fowls, Pheasants, besides a few others; take, for instance, Cuckoos, and Ruffs and Reeves. We have arrived at this conclusion by means of constant and repeated observation. Individuals who have the good fortune to possess Eagles' eyries on their estates are sufficiently acquainted with the old birds to be convinced that they pair for good. Large birds like these present characters which render them easy to recognise, and are thus well adapted for such observations. My father made a number of discoveries in connection with this subject. Only a few years ago the Magpie was very common in the neighbourhood of Renthendorf, yet now, from some unknown cause, this is not the case. We possessed at that time great facilities for watching the pairs, owing to each occupying a certain beat. A couple of these birds used to breed in a very thick fir tree in the centre of a neighbouring hamlet, and was easily distinguished by the female always biting her long tail-feathers short off, to a length of about three inches, during the breeding season; this she probably did, looking upon them as an encumbrance while sitting. By this stumpy tail she was easily distinguishable from all the other Magpies in the neighbourhood; and thus we were able to determine with certainty that they bred at the same place every year. Formerly we had several singular-looking female Carrion Crows among the pairs about us. A member of one of these pairs had been lamed by a gun-shot wound, and was, consequently, obliged to hop on one leg: this bird, with its mate, bred for years in the same copse, and almost, I may say, on the same tree. A friend of my father's so completely tamed a pair of Great Tits which bred in his garden, that they would take a pumpkin-seed from the hollow of his hand, and not from his alone, but even from that of any stranger. He had the pleasure of having his little friends about him, and observing their habits, for three consecutive seasons.

These, and similar facts, prove to us that those birds which pass the winter with us always reside within a prescribed circle; and, inasmuch as we know that this is the case with members of both sexes, we may argue that the pair keep together. Migratory birds are of still greater consequence in establishing the question of permanent pairing. In Africa I have often met with pairs of birds evidently migrating, which still kept together, thus throwing many other connubial couples into the shade! Still further in the interior, on the Blue Nile, we shot a couple of Booted Eagles, which were never at any time separated more than five hundred paces from one another, thus hunting and migrating in company. On my return through Egypt I met with these pretty Eagles in small flocks; and yet I could distinguish those that were paired off, by a sort of link or secret understanding which seemed to exist between them, and which distinguished them from the rest of the company. Those Swans which I observed in the winter season on the lake of Mensaleh were always to be seen in pairs. Among the Starlings, whose songs I had listened to in Egypt and Spain, during the months of January and February, even though massed together in large flocks, the individual couples could be distinguished. The same may be remarked in this country, when our northern visitors come and take up their winter abode with us. If one watches a flock of Fieldfares or Redwings, and can manage to shoot at one shot any two birds which may be close together, they generally turn out to be male and female.

I will now mention a fact observed by me in Southern Nubia, not the only one of the sort by far, which is strong proof of birds living and migrating in pairs. On a small lake in that country formed by the overflowing of the Nile, I saw a pair of Storks at a very unusual time of the year. Both birds were strikingly tame, thus attracting my attention. At first, however, it never occurred to me to wish to molest them, till the thought struck me that all the other Storks had long since sought their usual dwelling-place much farther to the southward; so I shot the pair. The male was in very good case and thoroughly healthy; the female, however, was, on the contrary, very thin and weak. On examination I found that one of her wings had by some accident been broken, and had not quite healed again. This misfortune, doubtless, prevented the bird from migrating with the main body, and obliged it to remain behind; its faithful companion had, however, stopped to keep it company. Such incidents require no explanation; they show us plainly that marriage, if we may so call it, among birds, is lasting and faithful. What we have previously stated is only apparently contradictory.

Birds pair only when full grown, *i.e.*, when they have got their full plumage. There are exceptions to this rule, which, however, apply only to the female, and that seldom; immature *Raptores*, and some of the larger Gulls, have been found breeding. This, nevertheless, does not take place with other birds. Such phenomena are, doubtless, caused by the dearth of females, when compared with males.

Both male and female cling to one another with great affection, and seek to defend each other, feeling the loss of either most deeply, whichever be the one that dies. This may readily be observed from the sad lamentations of the survivor for its dead mate, and the length of time the missing one is often sought after, as well as the total disappearance of the survivor from its old home when the search proves unavailing. The most touching example of such faithful devotion is that shown by the Love-bird which rarely survives the death of its companion, even when supplied with a fresh and suitable mate. No other creature can compare with it in this respect; such fidelity is sublime.

As a general rule, it may be asserted that the male feels the loss of its companion far more than does the female, though it would, perhaps, be unjust to accuse the latter of want of affection. This is probably owing to the ease with which the male bird can be replaced. The female has no time to mourn, for she is immediately surrounded with fresh suitors for her favour. If one kills the male of a pair of rare birds, the widow shows the keenest concern; yet, for all that, she usually bears up against her misfortune with no less composure than do members of the fair sex among ourselves under similar circumstances. With birds, as with the ladies, it is rare that a widow does not seek a fresh partner. The bird is, however, usually more successful than the lady. We may quote the one single exception to the above rule, which has come under our notice, namely, a bereaved hen Sparrow, who, though she had eggs to hatch and young to rear, would not take unto herself a second husband, but remained a widow, feeding her hungry tribe of nestlings with the greatest assiduity and quite unaided. The following anecdote is, however, a rather rude "pendant" to the former, and must be related, for fear our readers may be too much affected by the self-sacrifice of the widow above mentioned.

In Gebesee, a village not very far from Erfurt, the top of the manor house has for centuries boasted of a Stork's nest. For many years this was occupied by a pair of Storks, which were continually disturbed by various intruders, possibly also by their own children, who prematurely sought to obtain possession of the family residence.

One spring, however, there came a male Stork which surpassed all the rest, both in patience and impudence: this bird waged relentless war with the rightful owner while the female was sitting. The worthy paterfamilias found himself constantly in hot water defending himself and his young. Well, one day, tired out with the endless strife, he sits on the nest with his head under his wing. The enemy seizes the opportunity, and mounting high in the air descends with the velocity of a Gannet upon the unconscious owner of the nest, and with such force as to transfix the latter with his beak. To the grief and astonishment of all beholders, the poor fellow, who had so long and so ably defended his house and family, fell dead to the ground. And now, what think you the widow did? Why, of course she drove off the horrid murderer, and gave way to grief at the death of her unhappy husband? Not a bit of it; she immediately accepted him as her second partner, and continued sitting as though nothing unusual had happened!

This does not say much in favour of the female sex, and appears all the more glaring, when I relate a few other facts observed by my father, which go to prove what I have previously said. Some twenty years or so ago a Hoopoe and his mate took up their abode in a valley near our house, where they bred. They were the last of their race which ever settled near us; since then we have occasionally seen these birds during their migrations, but have never known them to breed with us. The sad end of this last pair of regular residents has possibly been handed down in tradition from Hoopoe to Hoopoe. The abode of the couple was in a hollow willow tree, surrounded with soft green turf, well watered by the rich stream of the Rhoda; this, together with the wellmanured pasture, forms a perfect paradise for a Hoopoe! The nest was built, the eggs were laid and hatched, and the young birds were growing grandly, when evil Fate approached in the form of a boy. The young urchin watched his opportunity, and attacking the nest, while the mother was engaged feeding the almost-fledged nestlings, captured both her and her young. He brought them to us, and mother and children were stuffed. The bereaved widower was inconsolable, and wandered hither and thither in search of the lost ones, calling, "hup, hup," in the most moving tones, not taking any nourishment; he kept seeking and calling, seeking and calling. This he did unremittingly the whole of the first day; and if, perchance, on the next, he renewed exhausted nature with a morsel here and there,—which, indeed, I very much doubt,—his sorrow remained unabated, till, at last, finding all search fruitless, he left the neighbourhood for ever.

Other males will remain by the spot where their nest once was, or where they have lost their mate, as though they could not give up the hope of meeting her—or, possibly, another—again.

The female of a pair of Peregrine Falcons, which breed regularly on the "Falcon's Rock," in the forest of Thuringen, was once shot, and the nest harried; and yet the solitary widower still frequented the barren pinnacle of that splendid rock, bereft of all that was dear to him. It appears to me, also, quite probable, that a Peregrine, whose female partner I shot on the top of the Pyramid of Cheops, was the same that I found there two years later provided with another mate. It, doubtless, never quitted the locality, and had met with the reward due to its perseverance.

The naturalist Faber relates the following anecdote in his description of the birds of Iceland. He once shot a female Grebe, whose companion showed the greatest concern at her loss, and sought to resuscitate her by striking the dead body with his beak, showing his sorrow in every possible manner.

From these different anecdotes we may well assume that the sorrow of the male for his departed mate is greater than that of the female under a similar bereavement. If we even allow that the male has just cause to mourn what to him is an almost irreparable loss, one possibly not to be replaced for a whole year, yet we can scarcely deny that he is possessed of a deeper sense of feeling than the female in these matters. The males, however, have their weaknesses as well. Though the female does not show such grief at the loss of her partner, and soon transfers her affections to another mate, still, during the whole of their married life, she is ever true to her lord and master; there is no "ami de la maison;" she does not ogle other males; and, in short, behaves with all modesty and propriety. I used to have the same high opinion of the males, until the Spaniards assured me that their fidelity to their female companions was not always the most immaculate. It is true, that as yet we have only observed instances of infidelity in one species—the Redlegged Partridge. This bird has, hitherto, always been regarded as a pattern of good behaviour, but what has once taken place may, of course, occur again. The Spaniards have a saying that, by the feast of the holy St. Antonio, which, if I am not mistaken, falls about the middle of January, each male red-leg has found his mate, and that the pair keep company in the most respectable manner from that time forth.

In the month of March the Spaniards begin the sport of hunting with the "Reclamo," that is to say, they place a tame male Redlegged Partridge in a cage, within shot; his challenge quickly decoys all the wild males in the neighbourhood, who, without exception, are in full readiness to enter the lists, and, of course, fall to the gun of the fowler. This sport, with the male as a decoy, finishes by the end of April; each cock bird has fought for and won his mate, and has, therefore, no further need to seek other adventures. The fowler now changes his method; he brings, instead, a female decoy bird, and in a minute all the males in the neighbourhood appear on the scene; not, indeed, the bachelors only, but also respectable fathers of families, whose legitimate partners are occupied with the cares of breeding, and cannot thus become acquainted with the short-comings of their husbands. The fact that males, which have already paired, are to be seduced by the voice of the tender charmer, is amply proved by the number of widows which one sees in June and July at the head of the half-grown coveys. With our Gray Partridge such temptations have not been tried, though I doubt much if they would be any better able to resist them than their red-legged cousins.

With the exception of such rare cases of infidelity, the married life of birds, so to speak, is happy and guileless enough, well worthy, indeed, of our imitation. Let the pair be ever so aged their mutual affection shows no falling off; it always remains the same; and each spring adds fresh fuel to the flame. The tenderness of one mate to the other, no matter how long they have lived together, is unalterable. Both birds alike assist in fulfilling the numberless duties of the breeding season; the male faithfully helping his companion in "household matters," lives with her on terms of the most tender intimacy and affection. Nothing is more charming than to witness this close union as exhibited at home amongst our Swallows, and, in the South, between Bee-eaters. The noisy Swifts and Martins withdraw themselves in pairs from amongst the flock, though so sociable at other times; Ravens, Rooks, Magpies, and Jays, rarely separate for more than a few minutes after they have once paired. The former occasionally have a long game of "touch last" with other couples, chasing one another through the air, have a chat, and then each pair returns to its own particular resting-place. Rooks assemble in the evening in large flocks on fallow fields, from which they return later to their common roosting-place; during the day, however, each pair keeps together. I have observed exactly the same thing with the Kite at Toledo. The conjugal state among birds is the happiest and the purest that we have. The most perfect unity of feeling exists between the pair: there are no quarrels, no "curtain-lectures" on stopping out too late! But rather manifestations of delight on the return of the absent one, if he or she has been prevented from coming home at the time appointed. It is true there are exceptions to this rule, as to all others. The Duck tribe, for instance, seem to have very imperfect ideas on the subject of paternal duties. As soon as their spouses sit hard, the Drakes of different pairs all club together, and pass the time amusing themselves in company, leaving all family cares—such as taking the numerous progeny to feed, guiding and protecting them—to their female partner; whereas the Gander manfully and heartily takes his full share in the household duties. And yet, among Ducks, the conjugal tie seems to be contracted for life, for as soon as the young have no further need of a mother's care the latter returns to her male companion; at all events, when the time for migration comes round, we see the pairs united again. I cannot say the same of the Cuckoo, who, as is well known, is one of those birds who, amid much noise and numerous passionate outbursts, begets, not simultaneously, but by degrees, a numerous progeny, which he leaves to the charity of strangers. The male bird treats his wife much as she does her eggs, and after pairing-time troubles himself as much about her as she does herself about her offspring. It is not improbable, either, that he does not confine his attentions to one wife, but pays court to one and all alike.

The Cuckoo may be classed as the connecting-link between those birds which pair and those which live in a state of polygamy, if he does not indeed, as before remarked, belong rather to the latter. Of these we have but few in Europe; as far as naturalists know only the following: the Capercallie, Black Cock, Pheasant, Quail, and Ruff. To them must be added several domestic birds, some of which, however, have only become polygamists through confinement; thus the domestic Fowl, Guinea Fowl, Pea Fowl, the Turkey, and the Duck. The much-abused Goose still preserves its reputation intact, even in confinement.

Any definite reason which may be advanced in explanation of polygamy among birds is, as yet, unknown to us. If we assume that Nature intended by this means to provide a more numerous stock of certain birds, especially among the Gallinaceous class, we cannot yet see why this could not have been equally well brought about by birds living in pairs, as the Gray Partridge, Redlegged

Partridge, Greek Partridge, and Ptarmigan; and, at the same time, it must be borne in mind, that the term polygamy can only with justice be applied to Ostriches, who do, in reality, assemble a number of hens around them: whereas, in speaking of the other birds, the term many-married, if we may coin such a word, must be applied; for the desire is reciprocal, each hen being willing to give herself to any male bird without the slightest hesitation, resistance, or objection; she, therefore, lives as much amid a plurality of males as the latter does of females. The necessity for this does not appear evident; the reason can, therefore, scarcely be aught else than an inordinate desire.

With the above birds, and others of similar habits, conjugal links, to speak rightly, are out of the question. The males only trouble themselves about the hen birds so long as they both feel the calls of nature. They are, without exception, all quarrelsome individuals, fighting for dear life with every other male that comes across their path, and appear, indeed, especially fitted for such combats. I here allude more particularly to the armour of thick elastic hackles with which the Game Cock is furnished, both at the back of the head and over the whole neck, by the end of winter, and which soon fall off after the breeding season is past: during the time they are worn they serve as a splendid defence against even powerful blows from the beak of an adversary, as well as being handsome adjuncts to the bird's beauty. Almost all males of species who live in a state of polygamy are remarkable for their comparatively superior size and beauty; they are almost half as large again as the female, and generally much brighter-coloured than the latter: their virility appears to be highly developed.

It is singular that the domestic Duck alone has adopted polygamy while in confinement. It is true that occasionally we find the tame Pigeon, contrary to its habits in its natural state, doing something similar, that is to say, that a cock Pigeon will divide his attentions between different hens. I look upon this rather as a *pendant* to the faithlessness of the Redlegged Partridge, and, if it is really a fact, only as an excess of politeness exhibited towards the fair—I mean female—sex.

For the rest, however much confinement may alter the habits, ways, and mode of life, among animals, and although compulsory unions between different species are often productive of mules or bastard kinds; yet, in a state of nature, with but few exceptions, those birds only pair together where the individuals are closely allied. We call these subspecies, in German, "Gattungen," because they will pair,* although the same expression is also used to signify a group. On shooting two birds thus paired they will invariably be found to belong to *very* closely allied species.

This is the accepted rule, though, as before mentioned, subject to individual exceptions. It happens, occasionally, that two different species pair together, when living in a state of nature, and produce mules. As yet, this has been proved to have occurred with but very few species, and in such cases, only, between species who either live in a state of polygamy, or are endowed with a strong desire to propagate,—or those very closely allied to each other. At one time the bastard Black Grouse (*Tetrao medius*) was considered a good species; now, however, it has been found to be the produce of a cross between the Black Cock and the female Capercallie, both birds having been seen together on the "playing-ground" of the former, and the fact proved beyond a doubt. Mule birds have also been observed among the different species of Indian Jungle-fowl; between Black Game and Willow Grouse; between the Carrion and the Hooded Crow; House and Tree Sparrow; as also between several various species of Ducks, &c. Of many cases, however, which have been reported we need proofs. "The actions of animals in a state of captivity," says Homeyer, "can in nowise serve as conclusive evidence, for the reason that they are surrounded by conditions of life which are wholly and totally artificial, and thus one would judge of nature from what is unnatural."

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* German: "Gatten."—*W. J.*

In confinement such *mésalliances* often occur among birds, and this has also taken place between creatures differing widely from one another; yet one cannot, in any way, assume from these accidents that the great variety of the bird world is to be mainly attributed to the crossing of opposite species. From what has gone before, it is highly improbable that creatures with whom the conjugal bond is so faithfully respected should take especial pleasure in passing the bounds of nature. We are too well acquainted with birds and their habits not to be able and willing to defend them against the charge of infidelity in general, where exceptions only rarely occur.

CHAPTER III.

NEST BUILDING.

> "It wins my admiration
> To view the structure of that little work,
> A bird nest. Mark it well, within, without;
> No tool had he that wrought, no knife to cut,
> No nail to fix, no bodkin to insert,
> No glue to join; his little beak was all,
> And yet how neatly finished! What nice hand,
> With every implement and means of art,
> And twenty years' apprenticeship to boot,
> Could make me such another? Fondly then
> We boast of excellence, whose noblest skill
> Instinctive genius foils."—HURDIS.

WITH birds the almighty power of love makes artists of both sexes: the male is an adept in music, and the female not less so in the science of architecture. It must be admitted that these accomplishments are inborn, and, in ordinary parlance, called "Instincts," though they none the less deserve the first appellation; for both arts are brought to perfection, and that only at mature age.

The architectural talent of the bird has nothing in common with that of man. It is almost entirely confined to the construction of a cradle for the coming brood, and but rarely employed in the building of a house, in our sense of the word.

I look upon the act of observing and watching birds while they are engaged in constructing their nests and rearing their young as one of the most pleasurable occupations of the naturalist. This offers to man an extensive field: he can glance deeply into the household life of birds, and thus study their every-day economy. Almost every bird has its peculiar habits, and each displays some characteristic exclusively its own; their social or unsocial habits are never more openly displayed than during the breeding season. The construction of their different nests is so various, that the examination of these alone is a highly interesting employment.

Most birds build their nests in the centre of their particular beat, and in the situation best adapted for that purpose, without troubling themselves further about other members of their own species; yet there are many which flock together in great numbers during the breeding season, and proceed to build, in company, as soon as they have found a suitable locality. Such colonies may equally consist either solely of members of one species or of different species, some even belonging to very opposite families; but a certain community of habits is necessary for the formation of such assemblages. Marsh and swimming birds, aquatic in their habits, are drawn together by their common necessity—water, and though the colony may embrace a great variety of species they live together in the greatest harmony, while similar assemblages of land-birds consist always of one and the same species. Common nesting places are generally used repeatedly, whereas isolated nests, with the exception of those of the larger birds of prey, Crows, Woodpeckers, and especially of those birds which breed in holes, and of some solitary breeding marsh-bird, are renewed every year. The situation and construction of the nest are always greatly indicative of the habits and mode of life of the builder. Thus the eyrie of the Eagle, or of the Peregrine Falcon, placed on the summit of some gigantic monarch of the forest, or rocky precipice open to view, resembles a royal abode or knightly castle. The nest of the Sparrowhawk, concealed from sight in the centre of some bushy tree, on the contrary, much more resembles some thief's hiding-place. The Wren's large cosy nest, built of moss and often snugly situated amongst it, is quite a homely little warbler's house. The broad floating nests of the Grebes and Waterhens may be said to resemble ships at anchor. The nests of the Bee-eaters, Swallows, and Weaver-birds, who breed in colonies, some in holes in banks, some against walls, or in the crevices of old buildings; and others, again, forming one gigantic structure for a whole community, are like veritable towns, inhabited by one class of people. The nests almost contiguous, and breeding-holes of different species of Sea-fowl, bear a great similitude to the well-watched domiciles of rightly-ordered and well-governed states.

Almost every bird has a predilection for some particular locality; and one may well say that every place, high or low, on the water or on land, in the forest or in the field, has its especial admirers. The stronger birds are too proud to conceal their nests, and thus choose high open localities. The weaker, on the contrary, eagerly seek to keep prying eyes from discovering the home of their holiest affections, and make use of every possible shift and stratagem to attain their end. If by some accident one of these nests is placed in an exposed situation, it is usually rendered almost invisible by its form and the material of which it is constructed, which either hide it from the eye of the invader or present insuperable difficulties to the accomplishment of his wishes.

Let us now examine the greater or less skill displayed in the construction itself. Everyone can see for himself that the clumsy domestic hen is incapable of constructing a beautiful nest, while, on the contrary, the active, clever little Long-tailed Tit gives evidence of far greater skill in the art of nest building. And yet one must not allow oneself always to determine the habits and temperament of a bird from the construction of its nest; for clever, dexterous birds are sometimes sadly deficient in this art, while sluggish and stupid ones occasionally build very pretty nests. Just as little can one judge of the appearance or the situation of the nest from the aspect of the bird, for different members of one family, or even of a genus, differ much in this respect. Thus, some species of the Duck tribe build on the ground, some in holes in the earth, and others on trees. With Herons some nest amongst reeds and rushes; and others on the top of high trees. In contradistinction to this, numbers of very different families, or even classes, resemble one another very much in the construction and situation of their nests. Thus, nests can only, in a certain degree, be classed according to their situation, structure, and correspondence with the habits of the birds themselves.

The simplest nests are, undoubtedly, those of the Little Owl, Barn Owl, Goatsucker, Giant Petrel (*Procellaria*), Guillemots, and others. These birds lay their eggs on the bare ground or rock, without the slightest preparation, not even so much as scraping a hole or cavity in which to deposit them, or treading down the grass, and by repeated turning of their bodies moulding a hollow for their reception, as do the Terns, Skuas, and many Gallinaceous birds, like the Capercallie, Black Cock, and Coursers. Partridges, Ptarmigans, Peewits, Sandpipers, Woodcocks, the different Gulls, the Black Tern (*Hydrochelidon*), the true Diver (*Colymbus*), &c., are somewhat more careful in nest building, lining the hollow they form with a simple layer of sticks, straw, grass, moss, leaves, and such like. Those *Raptores* which breed on *terra firma*, such as the Harriers, Golden Eagle, and Short-eared Owl, build a regular nest. Geese, Swans, Rails, Ducks, Larks, Pipits, Buntings, Redbreasts, Warblers, &c., build the best nests on the ground. Geese and Swans, it is true, do not take over-much trouble; Corncrakes and Rails, however, scrape a neat hollow, and line it with leaves and grass; Ducks quilt the inside of their nests with a coat of down; Larks, Pipits, and Buntings, line the hole scratched in the ground very neatly with grasses, bristles, and horse-hair, and form the whole into quite a decent nest; lastly, the Warblers build, amid moss, an artistic edifice of soft dry grass, especially the Wood Wren (*Phyllopneuste sibilatrix* and *Ph. montana*); to which a dome is added in the case of the Willow Wren (*Ph. fitis*) and Chiffchaff (*Ph. rufa*), as well as a comfortable lining of soft feathers, a small entrance-hole being left at the side of the nest.*

Different gradations of artistic talent are also to be found among those birds which usually breed in holes. The Eagle Owl, Little Owl, Barn Owl, Prairie Owl, Parrots, Toucans, Hornbills, Trogons, &c., simply occupy holes already formed, whether natural or artificial, and lay their eggs therein without further ceremony, whether the bottom be stony, covered with rotten wood, or simply earth. Those birds, also, which almost invariably breed in holes, such as Wheatears, Flycatchers, Redstarts, Tree- and Wall-creepers, Wrynecks, Hoopoes, and others, as well as Sparrows, Starlings, Jackdaws, Rollers, &c., select holes already prepared, but always build a nest of some sort inside. The following are better architects even than the former—the Shearwater (*Puffinus*), Storm Petrel, Little Auk, Puffin, Kingfishers, Sand Martin, and Bee-eaters; these excavate their nest-holes themselves, though only some of them line the interior. We now come to the Titmice, which form the connecting-link in these matters between the above-mentioned and the Woodpeckers, for besides digging holes in the ground they also do the same in trees, but only where the wood is rotten enough not to prove any great obstacle to their labours. Woodpeckers, indeed, also seek branches or stems which are decayed at the core, but are strong enough to perforate the outer skin, which is still sound; and yet it is not rare to find that one Woodpecker will get tired of his job, and leave it, when it is finished by another one.

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* *Phyllopneuste montana* and *Ph. fitis* are species founded by Herr Pastor Brehm; they are, however, not accepted as such now. In this case *Ph. fitis* evidently stands for our Willow Wren, *Sylvia trochilus*.—*W. J.*

The nests which are found partially floating on the surface of the water are very curious indeed: take, for instance, that of the Swan, which is so occasionally, and those of the Grebes, Coots, and Waterhens, always. These are attached to the water-plants around them, but not in such a manner as to prevent their rising and falling with the water. The nest of the Grebe is saturated with water, and sometimes the eggs themselves are lying in it; Moorhens and Coots, however, weave their nests almost like baskets, and build the floating foundation so thick and high as to keep the eggs quite dry. A large piece of wood floating on the water is readily used as a foundation for the nests of any of these birds.

Nests built in the grass amongst twigs of bushes, or in trees, are so various in their construction as to render it somewhat difficult to divide them into classes. The most slovenly builders are the Pigeons, whether nesting in holes or on branches: their nests are mere bundles of sticks and twigs, so carelessly and loosely put together that the eggs may be seen through the fabric from beneath. The nest of the Nightingale, which is often placed on the ground, and those of the Whitethroats, are incomplete and deficient; that of the Bearded Reedling, situated among dry reeds, is scarcely any better. The nests of Birds of prey are somewhat more carefully constructed, though the term well-built, in the sense of artistic finish, can by no means be applied to any of them. Let alone that a ready-built nest is often used in different years by several species, Birds of prey do not take much trouble in the formation of a new nest. The thievish Sparrowhawk does no more than lay a few dry sticks across one another; her cousin, the Goshawk, takes a little more trouble, and covers the upper surface of her nest with green fir sprigs; other species line their flat nests with some soft material, but never interweave it with the sticks, twigs, and roots of the main body of the structure. All members of the Crow family far surpass the *Raptores* in this respect; the Magpie, indeed, somewhat approaches the real "artiste" in the nest-building line. These birds usually bind the twigs together by means of turf and earth, and plaster the cup-shaped interior carefully with mud. In the North there are members of the family which line their nests with feathers.

The nests of any of the birds already mentioned have no pretentions whatever to be called works of art, and are all far inferior to those we are about to name. These are not only perfect in all particulars hitherto mentioned, but show such art as is beyond the reach even of human hands: they may be divided into two classes of artificers, —plasterers and weavers; and both stick their materials together with a glutinous saliva.

The lowest grade of plasterers are to be met with amongst the Thrush tribe. These coat the lower layer of the nest with mud, upon which they stick their neatly-finished lining of dry bents, roots, or leaves. The Song Thrush is, however, an exception, for it plasters the inside lining with tempered clay and mud, intermingled with touch-wood or small pieces of wet moss, the whole being worked to a smooth regular surface. The Nuthatch shows still greater science in the manipulation of mud and clay. It cleverly makes use of the holes made by Mr. Woodpecker, but is obliged to narrow the doorway, so as to keep out uninvited guests. To effect this it plasters up the edge of the entrance-hole with a wall of clay, often two inches thick, which becomes so hard as to defy the efforts of aught other than the original owner of the hole to break it down. A cousin of this charming little climbing-bird, the Syrian Nuthatch (*Sitta syriaca*), does more, for it plasters its nest to the side of the rock, much after the fashion of the House Martin. This bird is, however, surpassed by an allied family, the Oven Builders (*Furnarius*) of South America, well known for their skill as plasterers: their nest is an astonishing piece of work. It is generally built on some good-sized horizontal branch of a tree, and occasionally on roofs, crosses on church steeples, and other high places; both birds take part in the construction. The Oven Builders seek some muddy place, whence they carry balls of clay about the size of a musket-bullet; these they place on the branch and spread out by help of their feet and beak, until they have made a foundation of some eight or nine inches long; this done, they raise an almost perpendicular wall at either end, which they allow to dry; upon this they place a second and a third course leaning inwards, until both sides meet in the form of a dome, leaving an opening on one side of about four inches by two, to serve as entrance: in the centre of this oven-shaped building they raise a division-wall about half-way up, and line the breeding-chamber, so separated, with cotton, feathers, or other soft material. Such a nest is a matter of astonishment; and to it, in a great measure, "João de barro," "Jack mud hut," may ascribe the immunity he enjoys at the hands of the Brazilians.

Despite the completion of such a nest as the above, the prize-medal in the plastering line must be awarded to the Swifts and Swallows. Their nests surpass all the rest. Some Swallows make burrows in the sides of precipitous cliffs, at the end of which they form an oven-like excavation, in which they build their simple nest; the remaining species are plasterers. The localities chosen, and forms of the nests, are not the only points worthy of attention, but also the materials used. Our common Swallow (*Cecropis rustica*) sticks its nest, which is open, and shaped like the quarter of a hollow sphere, under some either natural or artificial covering; its walls are formed of small lumps of mud, glued together with saliva.* The Rock Swallow (*Cotyle rupestris*) places its nest, which differs but little from that of the last-named species, under shelter of over-hanging rocks. The House Martin attaches its nest to the outer walls of houses or the face of a rock; it is almost semi-spheroidal in form, with the small entrance-hole at the upper edge. The Alpine Swallow (*Cecropis rufula*), whose nest is, in a similar manner, stuck on to the side of a rock, lengthens the entrance with a long pipe or tube. The Swifts employ the saliva, which the Swallows use to glue their materials together, as a chief material in itself in the construction of their nests. The Common and Alpine Swift carry dry grass, feathers, and plant-down, into crannies in walls and rocks, lay them down, and cover them with a layer of saliva, which forms the whole into a hard mass when dry. The Pigmy Swift (*Cypsiurus*), by means of the saliva, plasters the cotton-wool of different plants in clefts of trees, forming a shallow mould, the sides and bottom of which are also plastered in a similar manner. The Tree Swift (*Dendrochelidon*) chooses thin isolated branches on the tops of trees, where to build its disproportionately small nest, the walls of which are composed of feathers, lichen, pieces of bark, &c., mixed with hardened saliva, the whole substance being scarcely thicker than parchment, and so very fragile that they can hardly bear the weight of the sitting bird, and oblige it to hold on to the branch. Lastly, the Edible-nest-Swallow (*Collocalia nidifica*) uses no other material than its own saliva: its nest, so highly prized by gourmands, is wholly composed of this substance, which resembles a strong solution of gum arabic, and is so plentifully and rapidly secreted from certain glands that the tiny nest is finished in a few days.

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* With us, as is well known, the Swallow often builds in chimneys.—*W. J.*

The True Weavers represent the *acmé* of science in the building department. It is not necessary to go out of our own country to find examples of these. Our Hawfinch, Greenfinch, and Crossbill, may well be reckoned among them. It is undeniable that they are but bunglers compared with some members of their guild, though they infinitely surpass all those birds we have hitherto mentioned. The first felt and weave together the twigs, grasses, and moss, of which they construct the main portion of the nest, lining the same with feathers, hair, and the finer grasses; the last-named build a very pretty nest of twigs, lichen, and moss, and provide the same with a roof, by placing it under shelter of a thick sprig of larch or fir.* The nest of the Linnet is remarkable for its beautiful lining of thistle-down; that of the Siskin for the general neatness of its structure. More advanced still are the nests of the Chaffinch, Goldfinch, and Long-tailed Tit. That of the Chaffinch, in particular, is a charming production: the exterior layer is always composed of mosses and lichen, closely imitating the colouring of the branch on which the nest is placed; next comes a layer of soft grasses, hair, and feathers, and the whole, both outside and inside, is smoothly finished off and artistically woven together. The nest of the Goldfinch is built of small roots and fibres interwoven with moss and wool; the interior, again, is sparsely lined with a few small fibres and grass: this, however, like that of the Chaffinch, is always open at the top.* It is not so with the nest of the Long-tailed Tit: this, like the former, is exteriorly constructed of moss and lichen, interwoven with greater care and skill, and domed over at the top, leaving a round hole at the side to serve as entrance; it has, also, a lining of feathers, richer and thicker, however, than those of the nests of the Chaffinch and Goldfinch. The nests of the Dipper and the Wren closely resemble in form that of the Long-tailed Tit. Both birds are guided in the structure of their nests by the locality in which they are placed; and, though somewhat capricious in their mode of going to work, always make a point of having their nests covered, whether they weave the roof themselves, or find a natural pent-house under which to place it. The general form of the beautiful structure is a hollow sphere made of moss, with a narrow entrance-hole; in the case of the Dipper it is lined with grass; and in that of the Wren this material is replaced by an ample bed of feathers. The nests of the following species are again a grade higher in the scale:—the Garden and Reed Warblers, Golden Oriole, Goldcrest, Sun-birds, and Humming-birds. The two first, alike in many other respects, also build similar nests. That of our Melodious Warbler † (*Hypolais*) rests on twigs, and that of the Reed Warbler is suspended between several reeds: both are constructed with stems and blades of grass plaited and interwoven together with marvellous skill. In the first these materials are interspersed with birch-bark, pieces of paper, threads and feathers; in the latter, with cotton-wool and tow, &c.; and both are always lined with the softest grass. The Golden Oriole and Goldcrest suspend their nests from the branches of trees; while the Sun- and Humming-birds felt the walls of their tiny dwellings together most beautifully, and thus lead us on to the masters in nest-building art. Of these I will first take the Fantail Warbler (*Cisticola schœnicula*) of Southern Europe: its nest is a perfect gem of a structure, combining, as it does, divers accomplishments. It is placed in the centre of a tuft of sedge or reed-grass, and the exterior skeleton is composed of the leaves of the same; these leaves are stitched together at their edges with threads, which the little creature makes out of vegetable-down or spiders'-webs. The threads alluded to, vary it is true in length and strength, and are in some places not well twisted together, yet they always suffice for the purpose they are intended. The leaves thus sewn together form a kind of basket doubled, with a felting of rush-down and cobwebs, and lined at the bottom with soft leaves; it is also furnished at the side towards the top with an entrance-hole. The nests of the celebrated Tailor-birds (*Orthotomus*) are in nowise more cleverly constructed than the above. Bernstein gives us the following description of a species of Tailor-bird inhabiting Java:—"When the bird has found a leaf to its liking it seeks a thread of cotton, covers the same with saliva, and then, boring a hole through the edge of the leaf with its beak, draws the thread partially through, and leaves it hanging. Thanks to the cohesive properties of the mucus the thread sticks fast; a second is fastened in a similar manner; and thus the architect continues its labours, until, by degrees, a sufficient number of filaments have been threaded. Most of the holes are placed at the edge of the leaf, though some are bored through the middle: those threads which have been passed through the border serve principally to connect the edges of the leaves, and those threaded through the centre, to secure the other materials, which consist of fine grasses, pieces of leaves, and other soft vegetable matter: these are attached by the above-mentioned threads to the outside leaf, and bound together by further cotton filaments, until the whole forms a bag-shaped structure. The Spidercatchers (*Arachnocestra*), also natives of the same island, build a similar nest."

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* The nest of the Hawfinch can scarcely be said to be *felted* and *woven* as regards its structure, as it is but little better built than that of the Wood Pigeon, and is inferior to that of the Bullfinch, being merely made of a few sticks loosely laid together, interspersed with pieces of lichen, and lined sparsely with roots and horse-hair.—*W. J.*

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* The nest of the Goldfinch is also often lined with plant-down and a few horse-hairs.—*W. J.*

† This Warbler is always spoken of by Dr. Brehm throughout the work under the Latin name of *Hypolais hortensis*, whereas he evidently means *Sylvia hypolais*, or the Melodious Warbler, which is a native of Central Europe, and never breeds in *this* country.—*W. J.*

Other Weavers suspend their nests from the very end of horizontal branches. Of these we may first mention the Phacellodomus (*Phacellodomus*), which use the least art and employ the coarsest materials: they are natives of South America. Their nest is a large long cylindrical bundle, composed of sticks, often almost as thick as one's finger: these are woven and laid together in various directions, the points projecting outwards on all sides, so that one can scarcely lay hold of it. Various binding materials are used to hold this immense mass together. The entrance is at the lower end, and leads to a passage running the whole height of the nest, which latter is often three or more feet in length, until the upmost storey is reached, where the breeding-chamber is situated: this is lined with moss, dry grass, wool, &c. Each year the bird adds a new chamber; and, in course of time, the whole structure becomes so large as to form a conspicuous feature in the landscape, and to impart to it quite a peculiar character.

The nests of the African and Indian Weaver-birds

(*Ploceus*) are either shaped like the half of a hollow sphere surmounted by a hollow ninepin, or resemble a simple concave sphere. They are almost always composed of strong lengths of grass, which are twisted round a branch, and form the foundation of the pendant habitation; finer grasses, again, are interwoven with these, and complete the shell, which is lined with similar, but softer, material; the entrance, situated at the top of the ninepin, or the roof of the sphere, is furnished with a tube of greater or less length, which falls outside the whole structure, and often to some distance below the same.* No snake can cling to this nest; and the most agile monkey, with a taste for eggs, must inevitably fall from the swinging branch into the water, should he seek to gain the coveted delicacy, as, when possible, the colony is always located over that element.

The Hang-nests (*Icterus*, *Cassicus*, &c.), may be regarded as the American representatives of the former. The last construct unusually large and deep pendulous nests. The Yapu (*Cassicus cristatus*), for instance, weaves a nest of bast, of from three to five feet in length by five or six inches in diameter, in the form of a bag rounded at the bottom; the upper end where the entrance is situated is hung to a thin branch, while the breeding-chamber at the bottom is lined with moss, leaves, and strips of bark. The texture of this structure, though looser than that of the Weaver-bird's nest, is strong enough to resist the influence of wind and weather for many years.

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* Some South African birds, like the Mahali Weaver-finch (*Plocepasser Mahali*), protect their nests, which resemble those of the Weaver-birds, by allowing the stiff ends of the grass, of which the nest is composed, to overhang it all round by several inches. Others interweave thorns in the structure for the same object.—*A. E. Brehm.*

We must now once more return to the Weaver-birds for the nest of one species, the Sociable Grosbeak (*Philetærus socius*), differs essentially from those of the other members of that family. Earlier travellers have related much that is fabulous of this bird; and it is from Sir A. Smith that we received the first reliable information on the subject. According to that gentleman they do not separate at breeding-time, as do other members of this otherwise sociable family, but one and all begin to build their nests together. They first proceed to construct a huge convex roof, in proportion to their numbers; this roof has for apex the top or large branch of a tree, and is composed of coarse grass, sufficiently thickly and strongly woven together to be impervious to storm and rain. Under this pent-house each pair suspends its especial abode, which is made of similar materials, though of finer quality, and is provided with a circular entrance at the bottom. Each pair builds close to its neighbour; and the whole colony so fill up the space under the roof with their nests that the entire under-surface is horizontally level, and looks as though perforated with numberless holes. Fresh nests are annually appended to the old structure, until the weight of the whole becomes too great, and the entire mass falling to the ground breaks up the colony.

In spite of these numerous known varieties of nests, that of the Penduline Titmouse of Eastern Europe bears off the palm for beauty of construction. This nest is woven, plaited, and felted, in such a wonderful manner as to render it almost impossible to say where each special kind of work begins or leaves off, or, indeed, how it is possible for the little artist to produce such a marvellous work at all. To all appearance the builder commences, like the Weaver-birds, by weaving and plaiting the ground-work of the nest out of soft leaves and bast; this is, however, interspersed with small pieces of moss and the down of the bull-rush, willow, poplar, and thistle, together with many other different materials difficult to define; all this is so exquisitely woven, felted, and plaited together, as to defy anyone to make out what material is used in the main construction of the work, or what is accessory! The whole nest resembles a felted bag, furnished with an entrance-tube on one side, and is suspended from the extremity of a very elastic bough.

The Penduline Titmouse belongs to those birds which construct special nests in which to roost. These domiciles are much looser in construction than the breeding nest, and greatly resemble hammocks; the general fabric reminds us, however, unmistakably of the first. Inasmuch, however, as they are only used as dormitories for old birds, which do not stand in such need of shelter, they have no occasion to be so carefully constructed. Our House Sparrow and Woodpecker do much the same; the former repair old nests for the purpose; and the latter chip out some comfortable hole wherein to have a cosy sleep during the cold winter nights.

Some birds build watch-houses, and also bowers, in which to hold their revels. The first-mentioned refuge is occupied by the male while the female is sitting; and in the latter terpsichorean entertainments are given. All the Weaver-birds are adepts in the art of building; and it is not to be wondered at, that besides building their breeding-nest, they should occupy themselves with constructing other abodes for the accommodation of the non-sitting male. At the same time it must appear to us singular that certain birds, which we should scarcely consider capable of such architectural talent, construct nests containing both breeding and other compartments. The Brown Heron (*Scopus umbretta*) builds a gigantic nest, five or six feet in diameter, which is divided into three distinct compartments: ante-room, store-room, and sleeping- or breeding-room. The last, in which the eggs are deposited on a layer of soft material, is the largest; in the centre apartment provender is stored; and the male keeps watch in the ante-room, warning his spouse of any danger that may be at hand. In Australia the Bower-birds (*Ptilonorhynchus*, *Chlamydera*) construct play-grounds. They form a floor of interlaid twigs and roots of about three feet in length, and then fix a row, or fence, of bent twigs along either side; the inverted points of these form a regular arcade, which is open at either end; all sorts of bright-coloured and glittering objects—such as shells, pebbles, broken pieces of china, parrot's feathers, &c.—are used to decorate the "salon." Some little distance from the bower, which is a rendezvous for the pair, the true breeding-nest is placed. In connection with these superficial sketches of the different nests, I have, at the same time, said enough as to the localities chosen, and need only add, that birds unwillingly, and therefore rarely, change either their place of abode or the materials of which they construct their nests, although singular exceptions to this rule are sometimes to be met with. Thus the Common Whitethroat has been known to build in a gooseberry-bush, against the side of a shooting-hut which was much frequented. The nest of the Crested Lark has been found under the metals of a railway; that of the Carrion Crow in a shed; a Teal has been known to breed in a clump of fir trees, far from any lake or pond. In cases of necessity the material also is changed.

Those who have closely observed birds while in the act of building, must have observed that the female is almost always the mechanic, while the male, more or less, plays the part of labourer. The reverse only takes place, to all appearance, in the construction of bowers and pleasure nests. As soon as sunny spring has awakened the tender passion, and the marriage bond has been contracted, the pair commence preparations for building. Both birds may be observed spying out every spot suitable for building in; and the female, also, may often be seen to turn and twist herself about in holes and corners, under branches and in forks of trees, as though really taking the necessary measurements, the male accompanying her the while. As soon as a desirable spot has been selected, work is commenced. When haste is no object, the morning is usually chosen for nest-building, before they seek their early meal; in cases, however, where no time is to be lost, the work is carried on in the afternoon, and evening as well; generally the male brings the materials. With some species, on the contrary, instance the Melodious Warbler and Chaffinch, he quietly sings his morning ditty, not troubling himself in the least either about his mate or her labours. With the Swallow, however, we find the reverse again, for the male not only assists in bringing mud and clay, but also helps his wife in the construction itself. All the materials are brought from the nearest possible source, though the less common and those used for lining the nest—such as horse-hair for instance—are often brought from a distance; and, indeed, it is frequently surprising how they manage to obtain them. Sticks and branches form the basis of most nests, and are, as we have observed, in the case of Rooks and Jackdaws, broken off with the beak, and by the *Raptores* with the claws, though they are more often gathered from the ground; lichen, moss, and small pieces of bark, are carefully selected and picked from off the trees, and feathers are often caught mid-air. Many birds, like the Magpie, cleverly make use of what is still serviceable in the old nest for the construction of the new one, though they never actually reoccupy the former. Birds of prey only carry with their claws; the rest always use the beak for that purpose; and the assiduity with which *matériel* is collected is perfectly astonishing,—a pair of Jackdaws will bring a stick a minute.

Among the more scientific builders, where the male assists, the female has enough to do to work up the materials brought by her partner, and can spend but little time in fetching and carrying. She often flies to meet and relieve him of his load, so as to save delay. Simple, though different, methods are adopted to accomplish the work. The longer pieces of grass, bast, &c., are wound on a stem or branch, by flying round about the same; the smaller pieces are moistened with glutinous saliva, and are then either stuck on or pushed into the interstices; feathers and hair are interwoven in a similar manner. The inside mould of the nest is formed and smoothed by the breast of the female, who keeps turning her body round and round in it. Thus the work progresses until the whole is finished, though eggs are sometimes deposited in the nest before it is completed.

It happens occasionally, though rarely, that birds find themselves mistaken in their calculations before the nest is finished. My father once saw a Siskin's nest deserted, which had been partially built in the fork of a good-sized branch, because the pair found out that there was not sufficient room, owing to the too close proximity of the adjacent limbs.

Birds greatly dislike being disturbed while building, and, if it is in any way possible, they carry on the work in silence, and without allowing themselves to be seen. Naumann was once greatly astonished to find a Magpie's nest in his garden, without ever having previously noticed the architects; probably they had only worked for a short time, and that before sunrise. Many birds are so annoyed at being disturbed that they will desert the nest, though it is almost completed, and commence building afresh. Bad weather, also, hinders them greatly. Most birds desert their nests after a very heavy fall of rain; others, under similar circumstances, delay the completion of their work. A Melodious Warbler building in our garden, ceased her labours for six days, owing to the nest having been soaked through, only recommencing her work after it had become thoroughly dried. The plasterers, *i.e.* those birds which build their nests of mud or clay, are obliged to carry on operations by fits and starts, allowing sufficient time in the intervals for the previous work to solidify, and thus learn patience and perseverance, virtues which are constantly required in wet weather, when the walls of their edifice often stand in no small danger of being washed away by the rain.

Unusual misfortunes will often cause birds to disturb or destroy their own nests; for instance, a pair of Storks took up their abode on Kämpen Castle, and the female had already begun to sit, when a spinster Stork made her appearance and decoyed her husband from his allegiance; upon which his lawful partner destroyed the brood, throwing the eggs out of the nest, and filling it with turf. Sad and sorry, she remained in the neighbourhood of her old home until the end of August, when another pair arrived, and rebuilt the nest—probably the faithless husband and his paramour. Usually, however, most birds frequent a locality once selected and defend the same courageously against all aggressors. Birds which breed in companies are often obliged to do this, as they not only rob one another of materials, but sometimes seize upon their neighbour's nests. All birds, on the approach of man or any predatory animal, show by their anxiety how dear to them is the cradle of their future brood. It is not every bird that will build another nest after deserting the first one; and, if ever done, the second is not so well built as the original. This inferiority of structure may also be remarked in cases where a bird has been hastily compelled to find a safe depository for her egg. It is not so, however, when it is a question of the usual second and third broods, which demand fresh nests; in this case the new edifice is in no way inferior to the first. Thus the new love demands her rights.

CHAPTER IV.

BREEDING.

There, in sweet thraldom, yet unweening why,
The patient dam, who ne'er till now had known
Parental instinct, brooded o'er her eggs
Long ere she found the curious secret out,
That life was hatching in their brittle shells."

MONTGOMERY.

THE last straw carried and skilfully interwoven, and a burst of joyous song from the male, proclaims the work complete. The loving pair sit side by side caressing and warbling—aye, possibly talking over the future of the coming brood, already germing in the warm heart of the future mother. Tenderly the male peers into the finished nest at the pretty eggs so cosily and safely housed, the very sight of which gladdens his heart. Bright and clear he now gives forth his most jubilant melody, while his partner sits by and listens, with all-absorbing interest. Then the pair fly to and fro, peeping silently again and again at the eggs, as though fully to assure themselves if the happy fact is really true! Again the warm love rises and courting begins afresh; the wooing, the shy denial, the pleading glance, are all renewed until the loved one is won anew and victory crowns the happy swain.

This may sound poetical, but it is a faithful picture nevertheless. Exactly as we have described it, is the conduct of many birds at the nest; one can easily distinguish the joyousness of their hearts by their songs and actions.

In general the first egg is laid immediately after the completion of the nest, and the remaining ones at intervals of from four-and-twenty to eight-and-forty hours. The larger birds of prey usually only lay an egg every three days; most birds, however, lay daily, or each alternate day.

The number of eggs deposited varies from one to four-and-twenty, but from three to six may be taken as the average. Most land-birds lay more than one egg, while amongst water-birds there are many species which never exceed this number, such as the Petrels, Shearwaters, Gannets, Guillemots, Puffins, Razorbills, Little Auks and Penguins (*Aptenodytes*). Birds laying two eggs are more common; thus the Eagles, large Owls, Goatsuckers, Swifts, Humming-birds, Pigeons, large Skuas and Black Guillemots never lay more. The nests of the following birds generally contain over six:—the Wrynecks, Titmice, Goldcrests, Wrens, all the Gallinaceous birds (some *Rasores* excepted) the Corncrake, different Rails, Waterhens and Coots (*Gallinula*, *Stagnicola* and *Fulica*), Geese, Ducks and Mergansers.

Each egg is greeted on its arrival with every demonstration of joy by the mother, and by the father with song, if he is gifted with that power. In some cases the female loudly announces her good fortune to the world at large, as all my readers must have remarked with the domestic Hen. As soon as an egg has been laid, both parents fuss about in the neighbourhood of the nest, keeping careful watch over the cradled treasure. In cold wet weather the mother keeps the eggs warm, without really commencing to sit in earnest, which last operation is only begun after the entire complement of eggs has been laid.

Up to this time the inclination to sit has been increasing in intensity; it evinces itself in more ways than one. At the commencement of laying, the temperature of the bird's blood rises, and this produces a restless feverish state of excitement, she utters peculiar notes and tones, eats but little, and casts many feathers from certain parts of the body, leaving bare places, which tend to facilitate the transmission of heat to the eggs. Many birds actually pluck the feathers from the necessary places and line the nest with them; some, the Grebes, for instance, swallow them instead. The bare skin now thickens, becomes wrinkled, heated, and of a reddish hue. With most birds these bare spots are on the centre of the lower portions of the breast and belly. In the Plovers, Guillemots, Razorbill, and Little Auk, they are situated on either side of the lower part of the belly; in the Kestrel they amount to three, one in the centre and one on each side of the lower part of the body. Some birds, like the Pigeons, Divers, Cormorants, &c., have none at all. These bare places are only found on the female, excepting in cases where the male assists the former in incubating, and singularly enough with those curious birds, the Phalaropes, they are found in the male alone. The size, and not the number of these patches, generally indicates the number of eggs; Gallinaceous birds possess only one patch, while the Razorbill has two.

The duties of incubation rest principally with the mother, the male being but rarely engaged in this onerous business; in most cases he provides the female with food and gives her the benefit of his company, lightening the weary hours with his song, or perchance by some feat on the wing or other pretty attention. At night the male roosts close by the nest; any further participation, however, in what he considers the special duty of his partner, he holds as unnecessary. Yet let us render honour to whom honour is due,—there are some fathers who take their fair share of sitting. From recent observation it has been discovered that in the case of the Ostrich the *rôle* is changed, inasmuch as the male not only sits on the eggs, but brings up the young birds, the female never so much as troubling herself about either of these duties.

Other males assist the female in sitting. Among the following species this duty is performed by both sexes alike: Woodpeckers, Pigeons, Plovers and Peewits, the Curlews, Phalaropes, Waterhens, Gulls, Grebes, Divers, Shearwaters, Cormorants, Puffins, Little Auks, Guillemots and Razorbills: with Eagles, Vultures, Buzzards, Sandpipers, Nightingales, Sedge Warblers and others, the same also sometimes occurs. In these cases each relieves the other regularly, though not in equal proportions. In the night it is generally the female that sits, at all events according to my experience I only know of one exception to this rule, and that is the Little Auk (*Mergulus*); the male sits by day, but always for a much shorter period than his mate. The female Pigeon sits willingly from three o'clock in the afternoon until nine the next morning, and patiently awaits the return of her partner, who in the meantime amuses himself as he likes, and that, let it be said, not always legitimately, to relieve her; he, on the contrary, after his five hours' spell considers that he has had enough of sitting still, and sets up a most indignant remonstrance if his wife does not return to the minute. The male shows marked dissatisfaction at being bored with such an unmanly occupation, while the female apparently throws herself, heart and soul, into the work.

Any unusual accident will demonstrate the different amount of parental affection developed in each sex. With the exception of the Ostrich, I know only one case in which the male (a Pigeon) ever hatched the eggs and brought up the brood after the death of the female; generally when any misfortune happens to the mother the brood is lost. This is not the case, however, when the father comes to grief. Should this occur the mother abates not one jot of her loving care, and is ready cheerfully to undergo anything on behalf of her young. Nevertheless, on some occasions the female has to be driven to the nest by the male.

The business of incubation must be very interesting to the reflecting observer. With what sensible care does the bird thus engaged approach her nest, always noiselessly, and generally from a certain fixed direction, seeking all the while to keep herself as much as possible out of sight. Having reached the nest undisturbed she preens her feathers, and glides silently on to her little treasures. We remember with pleasure seeing a tame Duck, which was being driven towards her nest, first shake herself and thoroughly dry her feathers before she would get on her nest. We had given no thought to the fact that she had just left the water, yet she did not for an instant forget her duties. It is necessary to observe with one's own eyes the tenderness and apparent self-consciousness with which a bird carries out the business of brooding, in order thoroughly to appreciate its conduct at the nest.

For weeks together parental affection, faithful to its task, unweariedly carries on its tedious duties, cheered by the passing song, until the well-earned reward is won. Each egg demands the same supply of vivifying warmth; and to this end the bird rearranges them in the nest, so that they either lie with their points together or, at any rate, in a circle. The eggs are also turned with the beak once a day at least, for every part needs warmth. Besides this, the bird is always careful to shield them from the heat of the sun when this is too fervid. In the nest of the Spur-winged Plover (*Hoplopterus*) I always found the eggs surrounded with moist earth during the glowing hours of the Egyptian noon: this was, without doubt, placed there by the mother to shield them from the noxious influence of excessive heat. At other times the bird is also well aware how to make use of the same. The Ostrich, it is supposed, scarcely ever sits on its eggs during the day, but performs that duty only at night. The same may be observed of Terns; and, probably, all birds which lay their eggs in the sand act in a similar manner. They are, doubtless, aware that the latter absorbs an amount of heat at mid-day which is almost equivalent to the temperature of their bodies. In this respect the method by which the young of the Mound-raising Megapode (*Megapodius*) are hatched is most singular. They erect curious edifices for this purpose—regular artificial incubators! The Englishman, Gilbert, soon after his arrival in New Holland, remarked certain sand-hills some five feet in height and seven in diameter: these tumuli the colonists took to be the graves of a race of people long since extinct, but were declared by the Aborigines to be the breeding establishments of a species of bird. After careful investigation the native account proved to be the correct one; for Gilbert saw eggs taken out of them in his presence, from galleries of a depth often of six feet, either in a perpendicular or oblique direction. Each gallery contained only a single egg, and was filled with loose sand, and it cost some labour to follow the direction of the tunnel and reach the end. Gilbert once met with a tumulus of this description, fifteen feet high and sixty in circumference, and found in one of the galleries only one egg. The singular mode of incubation adopted by this Gallinaceous bird is remarkable in two ways; for, on the one side, it is very extraordinary that a bird should bury its eggs in the ground like a reptile; and, on the other, it is almost incredible that so small a bird should be capable of erecting such a gigantic edifice. The power of maternal love, however, is all-powerful, and ever fertile in expedients. Of this fact I have found greater proofs in Africa than elsewhere. Take, as an example, the nest of the Pigmy Swift, I have already mentioned, which is built between the interstices of the palm leaves: it is flat, and the large broad leaves are often blown to and fro by the wind with great violence, so that the eggs and young might easily be thrown out; and yet this never happens. And why? Maternal care has guarded against this great and foreseen danger—the bird sticks both eggs and young to the nest with her glutinous saliva; and thus they are safe. We shall, however, return to the subject of incubation.

The time which elapses between the day the egg is laid and the appearance of the chick in the outer world, varies much with different species: the Goldcrest sits twelve days; the Swan, five weeks; the Humming-bird, probably, not over ten days, while the young Ostrich takes six times as long before it pierces the shell. And yet, one cannot always estimate the time by the size of the egg;

besides which, the weather has much to do in the matter of the greater or less duration of the time necessary to hatch out the young. Thus, the Pigeon takes seventeen days; the Quail requires three weeks; the Domestic Fowl, however, needs no more; while the smaller Colin (*Ortyx*) takes three-and-twenty days; the Pheasant, six-and-twenty; and the Guinea Fowl, eight-and-twenty. In fine weather the eggs of the Swallow are hatched in thirteen days; when the weather, however, is unfavourable, they are often not hatched before the seventeenth day: this is caused by the mother's absence in search of food being protracted; and thus the germ in the egg is deprived of the necessary warmth for a greater length of time.

The parent birds in nowise assist the young to disengage themselves from their prison, though as soon as they are clear they remove the empty shells, and warm the little strangers until they are thoroughly dry and comfortable. Most birds for some days after this rarely leave their young for long, and then only to procure food for themselves and their little family, as warmth is almost more necessary to these unfledged weakly creatures than daily bread. In the commencement their food is the softest that the parent birds can procure; later on they are furnished with less delicate fare. Birds of Prey first feed their young on insects or half-digested meat; granivorous birds on seeds, which have first been allowed to soften in the crop; Pigeons, with a cheesy substance, which is secreted from the walls of the crop, &c.

All the *Gallinaceæ*, and most Marsh- and Water-birds, lead their young from the nest as soon as they are dry, and teach them to pick up their food by pretending to do so themselves. Thus the chicks are seen assembled round the mother, though they do not do so until she, after scraping, calls them, and begins to peck about herself. Young Water-birds are taught by their parents in a similar manner; Grebes, and others of the better Divers, require somewhat longer instruction.

Those birds which are, so to speak, reared almost to maturity in the nest, naturally require much more parental care than the former. The parents are not only occupied with catering for their brood until these are ready to fly, and often for some time after, but have also other duties to perform. The generality of the *Raptores,* Crows, and a few others, alone avoid soiling their nests; all other nestlings require the tender offices of the old birds to preserve them in a state of cleanliness. These carry away the excreta of the young from the nest in their beaks, and, to avoid discovery of the latter, often transport it some considerable distance. Pigeons and Hoopoes omit this act of cleanliness; and every Pigeon-fancier is well aware how terribly the young of the former are infested with vermin. The actual business of feeding is alone no small matter. The everlasting little screamers require four times the nourishment the old birds do, which demand occupies their unremitting care and attention. Birds which feed their young from the crop have somewhat the advantage over others, inasmuch as they bring home more food at a time, and thus require to feed their young less frequently. All Warblers, as well as many other birds, are obliged to bring only a single insect, or at the most a few, in their beak at one time; and this occasions countless journeys to and from the nest: a pair of Goldcrests make a trip every three minutes. During breeding time noxious birds are very destructive to all the smaller animals in their neighbourhood, while the useful ones are ten times more active in their benefits towards us. A pair of Sparrow Hawks will carry at least five-and-twenty small birds to their young per diem, while a couple of Titmice or Goldcrests daily destroy thousands of insects, wherewith to feed their little ones.

With birds breeding in holes there are two things, in connection with the business of feeding, which appear to us incomprehensible: first, how they manage to collect sustenance sufficient for their large family; and secondly, that in the dark they do not overlook or stint any one of their numerous progeny. Just imagine hunting for and gleaning a thousand insects, or some thousands of their eggs, carrying them home, and, lastly, distributing to each tiny open beak its proper allowance! It is not unusual to find twelve young Titmice in a hole, all alike in appearance and all equally hungry; not one will acknowledge that he has had enough; that is to say, the ever-expectant bill is never shut. At the same time the old birds do not bring food both at the same time, but always alternately; and yet, most assuredly, not a single youngster is stinted, not one is overlooked or forgotten!

It is remarkable that amongst those birds where both parents feed their young, the mother is always the most active caterer of the two. Thus, the male Hobby (*Falco subbutco*) does not carry the quarry he has captured to the nest, but calls as he approaches, when he is met by the female, who bears the prize home and divides it between her young ones. The male Sparrow Hawk, more assiduous in the chase than the female, is, however, unable to feed the nestlings unaided, for his spouse alone is capable of tearing the prey to pieces, and were the young to be dependent on the father's care alone they would starve amid plenty. No mortal being can replace the mother!

In cases of great danger both parents will bravely and cleverly defend both young and eggs; often, indeed, in a most touching manner. They know their enemies, too. Birds which build in hedges or on trees will allow a dog to approach without betraying the slightest signs of fear; if a cat, however, appears on the scene, the aspect of affairs is entirely changed, and cries of terror are the order of the day. Birds nesting on the ground, on the contrary, are well aware that the dog is a dangerous neighbour. The protection afforded by man is readily recognized, as may be observed in the cases of Swallows, Starlings, and the shrewd Sparrow, even. Real danger is met differently by different birds. The little Warbler seems to implore you with beseeching glance to pass on; Whitethroats, as before-mentioned, feign lameness, so as to draw off your attention from the nest to themselves; Birds of Prey, Peewits, Gulls, and Terns, strike courageously alike at man and dog; the Petrels vomit oil over the aggressor; the Gannet remains quietly sitting on her eggs, but vehemently attacks all assailants with her powerful beak; the Domestic Fowl, as well as Ducks, Geese, and Swans, boldly attack the intruder,—a Swan has even been known to kill an otter in defence of its young; and a Farm-yard Cock to dispose of a female Sparrow Hawk, by aid of beak and spurs, under similar circumstances. I have observed the Black-headed Plover, on the sandy islets of the Nile, adopt a singular method of preserving its nest: this clever individual, on the approach of danger, immediately scrapes the sand over his nest, and then marches about close by, apparently in the most unconcerned manner. Everyone is well aware how an old Hen assembles her chicks together when danger is near, though it is, probably, not so well known that the Grebe will, in time of peril, take her young under her wings and dive with them ; yes, and even fly off holding them with the side breast-feathers. It sometimes happens that if birds have been repeatedly disturbed, they will remove their young to another nest. That incomparable observer, Audubon, saw this done by an American Kite (*Ictinea plumbea*) ; an agent of Count Wodzicki witnessed the same in the case of a Short-toed Eagle (*Circaëtos brachydactylus*) ; and others have seen a pair of Eagle Owls act in a similar manner. Our Woodcock (*Scolopax rusticola*) is said to carry away her young, holding them between the beak, feet, and breast ; one of the American Goatsuckers (*Antrostomus carolinensis*) even places its eggs in safety by carrying them away in its broad mouth.

Parent birds show such courage in defence of their young as is really astonishing. Naumann believes that the male evinces more anxiety about the eggs, and the female greater care for the young birds. I, however, have not seen anything which would go to prove that this idea is a correct one, though I have observed much to make me wonder at the conduct of both parents at the nest. Many quite ignore the question of their own safety while defending their home. A female Sparrow Hawk once knocked my father's cap off his head, while he was by her nest. The affection of parent birds for their young is indescribably great ; and, though mortally wounded, they will still seek to show their love. A Grebe, when shot, will not forsake her nest, but lay herself bleeding on her eggs and there expire; Ravens and Crows will still continue to feed and brood their young with the death wound in their breast. Very intelligent birds, however, seem perfectly aware that against man the boldest defence is useless; and, when molested by him, they adopt very curious means to provide their young with food. This has been observed in the Hobby, Kite, and Carrion Crow, who will drop the food from a height into the nest beneath.

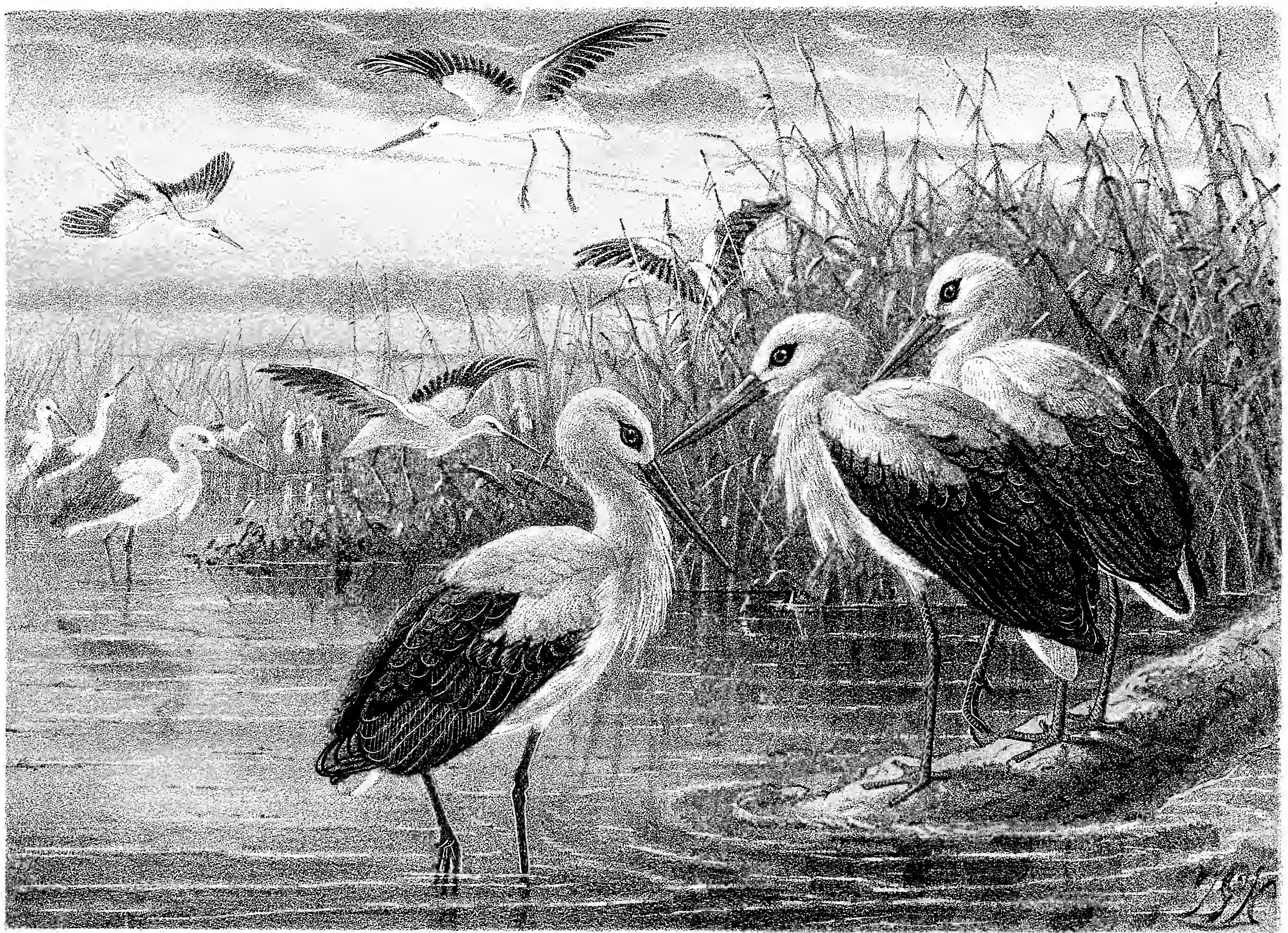
After the nest is abandoned by the brood a new duty commences, namely, that of schooling. The newly-fledged citizen of the world must now learn his trade, be taught how to move and work; and this instruction, as is natural, is imparted by the parent birds.

As soon as the young are able to fly they are no longer allowed to remain in the nest. In the meanwhile they have learnt the language of their parents, and are able to understand the different calls. The old birds now start them on their first flight: as the mother, by coaxing, teaches the baby-child to toddle towards her, increasing the distance every time, so do the old birds seek to make their young extend their flight; food held before them first incites and encourages the timid little things to fly. The young Hawk soon learns to wing its way to the nearest branch; the young Swallow to the nearest roof. The old bird no longer perches alongside the young bird to feed it, but swoops around it, inviting it to take food while on the wing. For the first few evenings the family return to the nest for the night; this practice is, however, abandoned, as soon as the parent birds consider the youngsters fully able to share every hardship with them. The next step is to teach their offspring how to obtain food for themselves. This lesson is taught by all birds in a most interesting manner, and especially so by *Raptores* and aquatic birds. As soon as a brood of young Hobby Hawks have learnt to fly decently, the whole family may be seen dashing about in the air, apparently engaged in a game of romps: this is, however, not the case, for the old birds are occupied in instructing, and the young ones in learning. At first the whole company go through a course of aërial gymnastics, the parent birds leading, followed by their offspring. The latter are then taught how to turn, put on a spurt and strike, as well as other tricks of flight, until they are thoroughly well-grounded in the art. These preliminary measures having been gone through, the two old birds take their pupils between them, one parent rising above the young aspirants, and the other remaining beneath them. Suddenly the upper Hawk lets fall a bird it has already captured; all the youngsters dash towards it: the first misses the quarry, the second likewise; the third, however, is successful, and, seizing the prey, flies off delighted full cry to the mother, to receive from her the well-earned praise. If all the young birds miss the quarry it is caught by the old one circling below, and the game recommences *de novo*. In this way the teachers continue their labours, until such time as the pupils have thoroughly learnt their lesson. Among aquatic birds the Grebes administer instruction for some length of time. In the commencement the mother takes her children on her back, and swims about with them; she then gives them the first lesson in swimming alone, by simply diving. At first, food is distributed amongst the little band from the beak of the old birds; very soon, however, they only lay it before them on the surface of the water; and, lastly, they hold the prey in view, at a distance, diving with it on the near approach of the young birds, so as to induce them to follow suit. If the pupil is obstinate and refuse to dive, the old bird seizes him under her wing, and without further ado quietly dives with the little culprit to the bottom, until he is able and willing to follow the trade of his fathers.

Young birds are the most obedient children in the world: they unhesitatingly obey the orders of their parents, and scrupulously follow their example in everything; one warning note from either parent is sufficient suddenly to silence the liveliest and noisiest troop of youngsters. The old birds are the first to fly from danger, and thus give the signal to their young to seek their own safety. It is rare that the parents have recourse to other means of securing obedience. My father, however, twice observed exceptions to this rule in the Lesser Gray Shrike: on both occasions the old bird had sounded the retreat more than once, and still the inexperienced young scamp awaited the nearer approach of the gunner. All at once up rushed the mother, knocked the disobedient imp off his perch with her beak, and then the two flew off towards the thicket.

Thus the young are led and taught until able to shift for themselves. Some species either leave their parents voluntarily as soon as they have arrived at maturity, or are driven away by them; others remain together for a long time, leading a sociable family existence. Sparrows, Finches, and Warblers, after the first fortnight or three weeks, do not trouble themselves further about their young; Crows and Birds of Prey keep them somewhat longer with them; Swallows and Wild Geese lead them on their autumnal migrations; while, lastly, Long-tailed

Tits and Partridges act as protectors and advisers to their young brood for almost a whole year. As a rule, however, one and all are left to shift for themselves as soon as they are able to do so.



J.G.Keulemans lith. M&N.Hanhart imp.

STORKS SETTLING FOR THE NIGHT.

CHAPTER V.

BREEDING COLONIES.

"Here, too, all forms of social union find,
And hence let reason, late, instruct mankind:
Here subterranean works and cities see:
There towns aërial on the waving tree."
POPE.

The sociable characteristics of birds are nowhere so visibly demonstrated as in those localities selected by certain species, where they breed in communities. There we find flocks united, which vie with, and in some cases exceed in number, the population of our largest towns: in such places we see assemblages of birds so immense as "to eclipse the light of the sun in their flight, deafen the ear with their screams, and cover even the rocks with their bodies when they alight," and cause us such astonishment as almost to make us doubt the evidence of our senses.

Wilson and Audubon saw flocks of Passenger Pigeons passing over them, which, taken at the lowest possible computation, must have out-numbered the *united human population of the earth!* The figures given us by these naturalists amounted not to hundreds and thousands, but to hundreds of millions! It is difficult to imagine such a phenomenon, and utterly impossible to give a satisfactory description of such a sight. For this reason we will content ourselves with a passing glance at these vast assemblies.

In the interior of Germany we have but few birds which nest in companies: these consist of Rooks and different species of Swallows and Gulls. About large and ancient buildings in cities, and in the high and favourably-situated banks of rivers, we meet with the nests of the House and Sand Martins (*Chelidon urbica* and *Cotyle riparia*) in such numbers as to enable us, in a small way, to form some idea of these breeding colonies. The House Martin will build nest on nest four deep, under the gables, cornices, and other over-hanging portions of an edifice; while the Sand Martins excavate their holes in considerable numbers close to one another, enlarging the further end into the form of an oven. The numbers of these colonists rarely exceed a hundred pairs. Peace and good will are essential characteristics of these assemblages of harmless little creatures; each individual pair lives quietly among the many, unenvious of the happiness of others; all quarrels and disputes cease as soon as the flock have finally assembled. Each family lives together, and yet the whole company may be said to form only one family. Such harmony as this cannot be witnessed without affording gratification to the spectator. The ancients, childish in their views of Nature's work, saw miracles in these cases. Thus, Pliny relates the following marvellous story of the Sand Martin, which would raise that bird to the rank of an extraordinary benefactor of the human race:—"At the mouth of the Nile, near Heraclea, in Egypt," says he, "the Swallows build nest upon nest, until they form a wall so strong as to present an insurmountable barrier to the inundations of the river; this dam is nearly a stadium in length, and could scarcely be constructed by human hands. Near the town of Koptos there is an island sacred to Isis, which these Swallows have fortified in a similar manner to preserve themselves from the flood. In the early spring they strengthen the façade with straw and chaff, continuing their labours night and day for three consecutive days, with such assiduity that many expire from exhaustion. This work has to be renewed every year." Many travellers have mentioned these Swallows, whose habits of nidification they have only observed at a distance, and speak of them, if not in terms so eulogistic as those employed by Pliny, yet with astonishment.

Both Northern and Southern Europe afford similar examples of these colonies. In the North they are Sea-birds, which we find congregating together in such vast flocks during the breeding season; and in the South certain species of Marsh-birds, and also Bee-eaters. The latter much resemble Sand Martins, both in their general habits and mode of building. I have often visited their nesting-places on the banks of the Blue Nile. A smooth face of the bank is selected, and is regularly perforated to a depth of some nine inches, the holes being placed so close together as to leave only a very thin partition between the oven-like excavation at the further end of each hole. In front of the entrances a flock of these graceful birds may be seen gliding to and fro in every direction; each individual, however, knows his own residence, and does not hesitate an instant when swooping at the hole. This, be it remembered, occurs where often from fifty to sixty holes are to be found bored in a surface of less than four-and-twenty square feet, and every entrance is alike! Every prominent branch and twig on the neighbouring trees are covered with these little colonists. As one flies away another takes its place, and thus they keep up a never-ending stream of motion, which is perfectly charming. To a true friend of nature it would be difficult to find a more delightful example of friendliness and good will amongst a general assemblage than that before him. These bright-coloured and graceful birds live on the best of terms with one another, each individual member respecting the rights and properties of its neighbours. This happy mode of life is one, indeed, well worthy of our imitation.

With colonies of birds belonging to the Crow family, matters are quite different, in them there is no end to the fighting and squabbling. In spite of the apparent good will existing in such gatherings, let it be remarked that no member of a rookery or flock of Jackdaws will ever sacrifice himself or his interests on the altar of friendship. The materials used in the construction of their nests require, it is true, no small amount of labour to collect; and thus it is not to be wondered at that everyone seeks to make his work as easy as possible—so they rob and cheat one another to any extent. If one member of a pair does not remain by the nest, the latter is very soon demolished, stick by stick, by other members of the community, or even unblushingly appropriated by some other pair in search of a domicile, who will defend the same to the last gasp against all assaults of the rightful owner. This constant state of squabbling does not even terminate when every pair is provided with a nest, but continues as long as the hens are sitting.

In flat districts rookeries are often of extraordinary size. In Lower Saxony a small belt or clump of fir trees not unfrequently contains as many as from five to six hundred nests, and on such occasions one may often find as many as five, six, and sometimes ten nests on one fir, some touching even. The ground under the trees is so thoroughly encrusted with their dung as to destroy all vegetation, except the trees themselves. The old birds when scared form a regular black cloud, and their screams are a perfect trial to one's nerves.

Colonies of Crows and Swallows, consisting as they do of only a single species, are far less extensive than similar assemblages in the south-east or north of Europe, which are composed of several different sorts. All travellers in the countries bordering on the Danube speak with enthusiasm of the heronries of Southern Hungary, and declare, one and all, that it is utterly impossible to give even an approximate description of bird-life in the swamps of the Danube during breeding time. Almost all the Herons of Europe may be found collected in Hungary in the spring, and among them Avocets, Curlews, Cormorants, Ducks, Terns, Gulls, and various Birds of Prey. Hundreds, aye thousands, may be found packed together on the small clumps of trees growing in the swamps or on the islands; it seems as though every class of bird was there represented. "A sight more varied, charming, or beautiful," says Baldamus, "would be hard to find than these Hungarian marshes with their feathered inhabitants, which are as remarkable for the different individual habits of each species as for the diversity of their form and plumage. Observe the most striking members of this community of Marsh- and Water-birds, and conceive for a moment these snow-white, straw-coloured, gray, black, prismatic, gold and purple, these green- and red-headed, crested, eared, long- and short-legged creatures, standing, stalking, running, climbing, swimming, diving, flying; in short, *living* masses, striking in shape and colour, standing out in bold relief against the bright blue heavens and brilliant green of the meadows, and one must allow that this specimen of bird-life in the swamp is a most lovely sight."

These immense breeding-places may be seen from a great distance. The noble oaks, elms, planes, and silver poplars, on the islands of the Danube, have all the appearance of woods decked with flowers by a fairy hand. Those living blossoms glistening among the dark-green leaves like gigantic roses are all birds, with which the top of the tree is thickly crowned!

Landbeck gives the following description of one of these breeding-places:—"The true Heron colony is to be found on a densely-timbered peninsula, lying between two swamps. It is about 900 paces long by 100 broad; most of the trees stand in from two to three feet of water, and the whole is surrounded with thick belts of sedge and reeds, interspersed with willow. The ground, grass, and low bushes were, at the time we visited the island, so covered with the excreta of these birds as to resemble a mass of snow at a distance; round about the trees the earth was strewn with broken egg-shells, rotten fish, dead birds, *débris* of nests and other filth; and the stench in the neighbourhood of this place rendered our stay almost unbearable. Amongst the bushes in the marsh were a number of young Night Herons (*Nycticorax europæus*) running about, which had either fallen out of, or been driven from, their nests; these were carefully tended and fed by their parents. At our approach a number of old birds rose from the dismal swamp, where they had been seeking for food, while the youngsters turned at bay against our dogs, with loud cries and open beaks. We were yet some distance off when we heard a singular noise of splashing and falling bodies of some sort or another, which we could not make out. On our arrival, however, the cause was soon apparent: it arose from a heavy shower of excrement, as also fish, which the young let fall from over-eagerness in seeking to swallow them, coupled with the occasional tumbling out of some unlucky half-fledged nestling, who had been unceremoniously ejected over the edge of the flat nest by his greedy companions. This fall of filth was already recognizable at the first and less important breeding-place; but when we reached the principal colony it was something extraordinary, rendering it scarcely possible to emerge from under the trees without being soiled by it. Woe betide the unlucky wight who essayed to climb a tree where young were in the nest; he was immediately covered from head to foot with a pale blue and green wash! I myself was thus treated while ascending some tall willow trees to obtain eggs and young, and take measurements and descriptions of the nests. The clamour in these breeding-places is so tremendous and singular in its character as almost to defy description; it must be heard before a person can form any idea what it is like. At a distance these hideous noises blend into a confused roar, so as in some way to resemble the hubbub caused by a party of drunken Hungarian peasants; and it is only on a nearer approach that the separate notes of the two species, the Common and Night Heron, can be clearly distinguished, namely, 'craick' and 'quâck,' to which the notes of the young, 'zek-zek-zek' or 'gek-gek-gek,' &c., in different keys, serve as an accompaniment. When close to, the noise is tremendous and the stench unbearable. This, together with the sight of dozens of young Herons in every stage of putrefaction and teeming with maggots, is perfectly sickening; though the contemplation of life and movement in this immense heronry is a matter of interest to the true ornithologist.

"The tops of the highest trees are usually occupied by the nests of the Common Heron; a little lower down is the habitation of the shy and beautiful Great Egret (*Egretta alba*); while among the forks of the lowest branches the Night Heron takes up her abode. All these species build in one and the same tree, the nests numbering not unfrequently as many as fifteen in a single tree, and yet peace invariably reigns between all these varieties.

"High over the trees appears the Common Heron, laden with booty, announcing his arrival with a hoarse 'craaich,' when, changing his note to a Goose-like 'da-da-da-da,' he either jerks the provender down the throats of his ever-hungry youngsters or throws it up before them, when the fish are greedily swallowed amid a desperate accompaniment of 'gohé-é-é-é, gohé-é-é-é,' a sound much resembling the frantic call of a calf which is being lifted into a farmer's market-cart. The conduct of the more cautious Egret is very different: circling far above the nest she first satisfies herself that no foe is hidden below before she alights amongst her family, which are much quieter and less hasty than their cousins. The Night Herons, on the contrary, approach their nests from all sides, high and low, their crops filled with frogs, fish, and insects. A deep 'quâk' or 'gowek' announces the arrival of the old bird already from some distance, to which the young answer while feeding with a note resembling 'queht, queht,' or 'quehaoâheh, quehoehah.' As soon as the parents have taken their departure the youngsters recommence their concert, and from every nest uninterrupted cries of 'tzik-tzik-tzik, tzék-tzék-tzék, tzgé-tzgé-tzgé,' and 'gétt-gétt-gétt,' are the order of the day. This amusement is varied by the nestlings climbing out among the branches till they reach the top of the tree, whence they have a good look out, and can see the old birds returning home from a long distance, though in many cases they are often mistaken as to their identity.

"The consternation we occasioned by shooting several Herons from off the trees was great in the extreme; every bird able to fly immediately sought safety on the wing. Nevertheless, despite the fright we gave them the love they bore to their young would assert itself; and before long we saw the Common and Night Herons circling over their nesting-places, peering down through the branches at the enemy beneath, and in a quarter of an hour they all returned to their avocations as before. The Egrets were more cautious by far, not settling again for over an hour; that they acted thus is not surprising, for the great beauty of their feathers subjects these birds to such constant persecution in Hungary, and especially on that island, as to give them good cause to keep a sharp look out. The bailiff of the island assured us that this extreme shyness only dated from the period when they were no longer preserved.

"After we had procured such specimens as we wanted of the three species of Herons, and had, on passing a swamp, watched the manœuvres of one or two Purple Herons, we determined to visit the Cormorants, which were breeding near by, in single pairs and also in large colonies, in company with Herons. The same sickening scene which we had observed at the first heronry was about to be repeated here: dung, broken egg-shells, putrid fish and birds, gave off the same noisome stench as in the first place. The Cormorants, young and old, sitting complacently on their nests, bestowed wondering glances on the uninvited guests from their beautiful sea-green eyes, while the parent birds greeted us with a deep bass note, not unlike an outburst of laughter, which may in some way be compared to the sound 'goc-goc-gog-gog-gog,' and their offsprings set up a curious whistling song, resembling 'haidioh, haidioh,' which sound we thought rather pleasant than otherwise. As soon, however, as we disturbed this peaceful scene by a shot, the Cormorants darted from their nests like snakes, with the speed of an arrow from a bow, over the trees to the other side, but did not return so soon as the Herons. After we had hidden ourselves amongst the bushes they came back, flying at a great height round and round, examining to see if the coast was clear; and at last, as soon as they seemed satisfied that all was safe, they darted on to their nests with the same celerity as they had left them, squatting close, so as to keep themselves out of sight; their caution, however, proved unavailing, and several fell to our guns. The wounded showed a courage and determination which quite surprised us: the winged birds turned at bay with great ferocity, dealing our dog such a hail of blows with their beaks as to drive him howling away: an old bird, which I had mortally wounded, gave me a blow through my trowsers which instantly drew blood, while my brother was struck by another on the forehead between the eyes, and narrowly escaped being blinded. The nests of these birds were larger and better built than those of the Herons, offering no small resistance to our shot.

"In former days, and up to the year 1817, this island was the seat of an immense rookery, some of the trees being, so to speak, completely covered with Rooks' nests. In the above-named year there arose a great famine throughout Europe, which suggested to the ignorant peasants the idea that these harmless creatures were the origin of their misfortunes, and caused them to look upon the Rooks as birds of ill omen, and on this account they were mercilessly persecuted in every possible manner, and immense numbers of them destroyed. The Rooks, rendered cautious from experience, abandoned the island, and only returned in any great numbers after they had been preserved. These birds, however, never again became as numerous as they had been in former years; for in 1818 four pairs of Common Herons appeared on the scene, and took forcible possession of several Rook's nests, driving away their rightful owners; and, as the very next season the long-legged fraternity increased to over a hundred pairs, the Rooks were soon driven from the best spots, and gradually forced to retire, until at last they abandoned the island altogether. In 1821 a number of Night Herons suddenly appeared and settled down among their cousins and the Rooks; at first, however, only taking possession of such nests of the latter as remained unoccupied, though, after they had once established themselves, they became much less scrupulous, not hesitating to help themselves, and living in a state of open warfare with the unfortunate Rooks. As they continued to return in subsequent years, and reared from two to four broods in a season, they became excessively numerous, almost outnumbering the Common Herons, and are now, indeed, the principal occupants of the island. About the year 1826 several pairs of Egrets came and took up their residence between the nests of the other two species, with whom they soon became on friendly terms. They did not, however, increase in such numbers as did the other Herons, although they hatched out more eggs. On account of the keepers' great hankering after their plumes, so valued in Hungary, they were subject to such persecution that even now they are not numerous, though they appear to be less so than they really are, by reason of the old birds taking wing before one can approach, and delaying their return to the nest. The year 1827 was a disastrous one for the Heron tribe, owing to the arrival of the Cormorants, who soon occupied the tallest and finest trees, driving away the Common and Night Herons. Sanguinary engagements took place for the possession of the nests, but the tenacity of the Cormorants at length gave them the victory, leaving them masters of the field, and in nowise troubled by either the screams and croakings of the Herons or the blows dealt by their tremendous beaks. Inasmuch, however, as the Cormorants, after they were once firmly established, did not take any further aggressive steps, peace was soon established between all parties, and now several Cormorants' nests may frequently be seen on the highest branches of a tree, side by side with ten or a dozen Heron's nests, the tenants of both flying to and fro as though they belonged to one family.

"The proportions of the numbers of the different species run much as follows:—to 2000 Night Herons there will be 500 Common Herons, 200 Cormorants, and 100 Egrets. The increase of the feathered population on the island would be something astounding, were it not that some hundreds are shot, and numbers of nests taken every year, besides the depredations committed amongst the young birds by the Marsh Harriers, Black Kites, and Goshawks even, which breed in the neighbourhood."

In the breeding-places of the North the assemblage of birds, in the season, is far larger than those on the Danube. Most Sea-fowl are sociable; and on this account flock together in myriads at nesting time. On the southern islands of the North Sea, and still more so on those near the coast of Jutland, the most wonderful colonies of Gulls and Terns may be seen every spring. Naumann relates the following, gathered from his own personal observation:—

"The Sandwich Tern (*Sterna cantiaca*) breeds in flocks on all the islands of the North Sea, and in some places crowded together beyond belief. A colony of a hundred pairs is very rarely seen; they always amount to thousands, aye, hundreds of thousands, and occupy comparatively a very small area, forming a single community. Such a swarm as we describe is not spread over several different islands, nor even the whole of one, but over only a circumscribed space. Thus, on the little island of Norderoog an innumerable flock of Sandwich Terns only make use of a very narrow strip of beach running along the northern and eastern shore, upon which the entire colony is crowded together, both birds and nests being placed in dense rows. If an intruder steps among them they encircle him in such numbers that the mass of fluttering forms fairly darkens the light of day, and their screaming quite bewilders him. While, with downcast eyes, he treads carefully to avoid breaking the eggs, the birds become so bold and dash so close that they not unfrequently strike his hat or head with their pinions, besides soiling him with their excreta. The most vivid description will fail to give any idea of the confused swarming, whirring, screaming mass. No one who has not experienced it himself can form any estimate of the appearance of this teeming, living crowd. The way in which the nests are crowded together is most singular; in places, indeed, where there is plenty of room the sitting birds are often so close to one another as to touch, and they would be in each other's way did not every bird sit with its head towards the sea. Even when taking the greatest care the egg-collectors cannot help crushing some, because in many places the nests are not the breadth of a foot apart. It is a beautiful sight to behold at one glance so many nests and eggs collected at one spot."

The most remarkable thing is that each individual bird should know its own nest amongst so many, and amid such a turmoil. It is possible that the birds are not particular as to what nest they sit on, and that each Tern occupies any nest that may be vacant, yet the results of observation seem to contradict this supposition; thus we may assume that each bird knows its own nest.

As colonists, next to the Terns come the Gulls, the Ravens of the sea. Most of the islands of the North, whose positions render them adapted for the purpose, are used as breeding-places by one species or another; nearer the Pole they breed in company with other arctic birds. On the Continent, even in Germany in some places, the Black-headed Gull (*Larus ridibundus*) often nests in extraordinary numbers. "A single pair," says Naumann, "is never found breeding alone, and a colony of from six to ten pairs is rare; they are far oftener found by hundreds and thousands, which form a single assemblage, nesting together, like the Terns, within a very small area. There are flocks which resemble a swarm of bees in numbers and activity, and seem completely to darken the air." The screams and confusion at such breeding-places is indescribable. Every creature, harmless or otherwise, is immediately greeted with loud cries, and driven from the spot. Neither man nor dog, or indeed any other animal, can stand this treatment for any length of time, for they not only stupify eyes, nose, and ears, but boldly attack any intruder on their domain, and are ready to risk their lives for the benefit of the community. They only allow such allied species to mix with them as are able to take care of themselves. Other Gulls are not quite so exclusive, though each species keeps to itself. Naumann gives a description of a breeding-place on the island of Sylt, which, at the lowest computation, accommodates no less than five thousand pairs of Herring Gulls every year. "At a great distance the sand-hills, tinged with green caused by the sparse vegetation, may be seen covered with innumerable small white spots, which, on a nearer approach, prove to be Gulls. On invading their territory one is charmed by the confidence shown by these lovely creatures, which, dispersed in pairs over the plain, rise from their nests as the intruder draws near, and stand by their eggs. These inimitable beings remain perfectly quiet, and, showing not even the slightest sign of curiosity, allow the visitor to approach, almost to within a distance of fifteen paces before they take wing, when they swoop close over him, increasing in number with every step he takes. The air is filled with a mighty swarm of screaming birds, while a glance ahead shows hundreds on or near the nests awaiting the arrival of the visitor with the same *nonchalance*, until their turn comes to take wing."

The rocky breeding-places of the far North only differ in one respect from those just mentioned, and that is in the number of different species which nest together in one spot, though the mass of birds breeding there is no less numerous. On the mighty precipices of the islands and headlands of the Arctic seas, the following species are found breeding in company:—Gulls, Terns, Petrels, Guillemots, Razorbills, Puffins, Shearwaters, Gannets, Cormorants, Eider Ducks, and other Sea-birds; besides Sea Eagles, Peregine Falcons, &c. Their nests are placed on rocky pinnacles and ledges in natural caves, or in holes scratched in the earth, in clefts and rifts in the rocks, or in other suitable situations. The breeding-places commence just above where the line of breakers surges against the tremendous headlands, which rise perpendicularly hundreds of feet in height from the bosom of the ocean, sometimes even over-hanging it. From this point to as high as the eye can reach, the whole face of the rock is covered with nests, the side most sheltered from the prevailing wind being the one selected. From a distance these rocky walls look as though they were covered with snow, and, on nearer approach, have all the appearance of one vast bee-hive surrounded with millions of living creatures. The summit of the rock is covered with Gull's nests; in the earthy portion of the cliffs and amongst the loose stones the Puffins and Little Auks excavate their holes;* Guillemots and Razorbills are seen amongst the crevices in the rocks; while the shelves and ledges are occupied by Petrels, Gannets, and

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* The following extract from Capt. M'Clintock's Arctic voyage in the 'Fox' (page 139) may interest the reader:—"The Little Auk lays its *single* egg on the bare rock far within a crevice, beyond the reach of fox, Owl, and Burgomaster Gull: we shot two hundred while on shore; and, by moving the stones, obtained several dozens of their eggs."—*W. J.*

Cormorants. Thus no single spot remains untenanted. The mere fall of a stone over the precipice scares thousands upon thousands of birds, which take wing with screams so powerful as to drown the roaring of the surf below. The confusion of voices which strikes the ear is indescribable; and one might easily imagine the rocky headland to be haunted with evil spirits, as described in the words of Mephistopheles:—

> "Dost hear the magic voices from above,
> Close around us, and in the distance too?
> They whirl along the rugged mountain's crest
> A weird chorus of spirit-harmony!"

This noise increases—the rushing, roaring confusion of forms and sounds—the nearer one approaches the centre of the colony. All the senses become, at last, tired and stupified; the ever-moving mass passes and repasses before the eye, and the continuous whirring of thousands of rushing wings seems so great as to render one alike powerless to distinguish either sound or colour; the stench alone remains but too clearly impressed upon the nasal organs.

I shall never forget the headland of Svärtholt, not far from the North Cape. I had already heard in the south of Norway that the Kittiwake (*Rissa tridactyla*) bred there, and was told that to form any idea of their immense numbers it was necessary to scare them with a cannon shot. My good friend, the captain of the mail steamer, on board which I was travelling, kindly acceding to my request, passed over to the place and fired the magic shot whose thunder was to arouse the breeding swarm. While we were yet a mile and a half off the headland we saw flocks of from five to eight hundred of these Gulls either floating on the water or flying in long strings to their place of assembly. As we approached Svärtholt, however, these flocks increased in number to an amazing extent. The promontory now began to show itself, rising almost perpendicularly from the sea, a wall of rock interspersed with numberless rifts and caverns, tinted white and gray with the excreta of the occupants, and its sides and summit standing out in bold relief against the sky. In the distance this wall looked gray, but, on examination through a telescope, proved to be dotted over with innumerable white spots. These were the Gulls, or rather, chiefly, their heads. There they sat, head to head, above and below, in the crevices, on the projecting ledges and corners, on every pinnacle and in every rift,—nothing but dot upon dot, bird upon bird, as far as the colony reached. Nearer and nearer we came on, out of the darkest clefts these white heads peered forth: the whole rock resembled a sheet of slate covered with thousands of little white specks; it seemed as though its surface was decorated with chains, rings, and stars of white. Our ship, though scaring but a small portion of this peaceful community, caused a terrific disturbance: the north wind howled, the raging billows of the icy ocean dashed wildly into mist against the iron-bound coast, and yet the screaming of the birds could be distinguished far above the roaring of the surf and the clanking of our engines. The shot was fired; its sullen boom reverberated from rock to rock, awakening an indescribable chorus of sounds, as though all the spirits of the nether world had broken loose! The whole rock was enveloped as with a thick veil, which even eclipsed the view to seaward. As in a winter's storm thrashing through the air, the snow-charged clouds, hurled one upon the other, burst into flakes and sink earthwards, so there seemed to fall a perfect snow-storm of living birds; both sky and headland were hidden from sight by the whirling feathered cloud, of which the little steamer seemed the centre: this cloud, lowering to the ocean, allowed the outline of Svärtholt to become visible again, when a fresh scene struck the eye of the spectator. The sides of the rock appeared as much covered with birds as before, while thousands kept flying to and fro; on the surface of the sea it seemed as though, by magic, the billows had broken up into myriads of wavelets, each glittering with white foam, and yet the heaving mass of waters itself dispelled the illusion. The living surges gently rocked their numberless children,—which, frightened by the approach of man, had sought shelter on their bosom,—as a loving mother dandles the babe in her arms. How am I to describe the exquisite scene? Can I say that the sea had interwoven millions upon millions of bright pearls in her dark green dress; or shall I compare the Gulls to stars, and the sea to the firmament of heaven? I know not what to say. One thing, however, is certain; I had never seen anything so surpassingly beautiful in my life; and all the other passengers, even the captain himself, agreed that one must have beheld such a scene with one's own eyes to believe it possible. While we all stood amazed, giving vent to loud exclamations of wonder and pleasure, the ship was cutting her way apparently through the swimming and flying Gulls, which, now collecting together, returned in hundreds to their resting-place.

Those rocky breeding places which are not so much frequented by Gulls are none the less grand in appearance than such colonies as we have just described. During the same journey in Norway I visited the Nyken, three bell-shaped precipitous rocks, rising sheer from the ocean some three or four hundred feet above its surface: they are distant about four or five hundred yards from the mainland, on which side they are encircled by a belt of reefs. I found the following species breeding here at the time of my visit:—Puffins, Guillemots, Razorbills, but few Gulls, and not many Cormorants. The layer of turf with which these rocks were clothed, to two-thirds of their height, was everywhere so perforated with holes that a clear space the size of a table free from such excavations was nowhere to be found.

It seems to me impossible to describe the scene which lay before us as we approached. We were not greeted with any piercing screams, but were gazed at by hundreds of thousands of eyes: the whole rock was alive; from every nook and crevice, above and below, in front and behind us, everywhere where one turned the eye birds were to be seen shuffling and crawling out of their subterranean retreats; and a moment later the island was not only covered by thousands of white specks, but surrounded also by an immense dark cloud, which, as well as the white dots, consisted of birds. By this time the Nyken could be compared to nothing else than a giant bee-hive, from which a young swarm is taking its departure. Every rift was occupied: on the sides, close around us, from six to ten paces off, there they sat,—in pairs, by tens, by hundreds, and by thousands. The rock was literally covered with birds. They were to be seen on all sides, sitting, squatting, and running: here was a fine opportunity for watching, studying, and almost, as it were, talking with them; they departed and returned in thousands without intermission. One could not make out whence they came or whither they were going, although one could see that the direction lay up and down, between the sea and the rock. The more we advanced the more their numbers increased. The waters were covered with birds; and when we found ourselves on the summit of the mountain we looked around from a height of three hundred feet, and yet we could neither see where the living swarm ended, nor observe any part of the sea unoccupied by Fowl. I essayed to estimate their numbers: fixing the eye on a small square, and dividing that again into four others, I began to count. By this means I made out that one of the lesser squares contained over two hundred birds, which thus gave about a thousand for the large one. I could, however, have placed thousands of these squares together, and yet not have filled the space which I saw covered with birds. The flapping, whirring, rushing, and screaming around us, was such as to make one almost giddy: here I saw and understood the beauty and charm of life in every motion. The Razorbills, apparently so stiff, did not remain quiet for an instant, but were unceasingly moving, at the very least the head and neck, in all directions: this improved their appearance immensely, for it gave an artistic character to their outlines; they constantly bent themselves backwards and forwards, as though scenting or on the look out. The Puffins sat quite still, but for their extraordinary-looking heads, which were in perpetual motion; they often shuffled to and fro on their ledge of rock, and looked most comical when peering down with questioning glances from the entrance of their holes.

It gave one untold pleasure to wander among these millions of creatures. I was sometimes looked upon with astonishment, at others with dread. I could have "bagged" hundreds, but did not shoot any on the first day, and on the second only had a few shots where they were thickest: the result was comparatively small, for I only picked up the dead, as almost all the wounded succeeded in reaching the sea, where we lost them. As we left the rock the midnight sun stood large and still above us, gilding the pinnacles with his rays; and all was as silent as with us, at that hour. On this account we paid another visit the next morning, to see if the scene had altered in appearance; sure enough, the aspect of affairs was totally different. The birds had left the sea, and were seated in tens, hundreds, and thousands, tier above tier, on the rock, which resembled a gigantic nine-pin dotted from top to bottom with white specks. These were the birds which were not engaged in brooding, and thus represented scarce half the population. I fired a shot, which created a marvellous effect: hundreds of thousands precipitated themselves at once into the ocean beneath. They swarmed around us, their cries resembling thunder: the Razorbills calling, "arr, err, querr, queör;" the Puffins, "err," in a more subdued tone; and the Gulls screaming amain. They sat about us in thousands and thousands, and encircled us on the wing. When they dashed down to the sea the masses were so thick as to look like a lean-to roof from the rock to the water, flying as they did in one unbroken line.

We spent the whole day on the island, and thus had an opportunity of observing the birds at different stated times; for instance, in the morning and afternoon: singularly enough at these times they swarmed for one hour around the rock in one dense cloud; the reason, however, we could not divine. The rest of the day and during the night they remained quiet. They often took flight without any apparent reason, and then, alighting again, sat as if glued to the spot. A Falcon, however, which had its eyrie in the neighbourhood, created a great disturbance whenever he made his appearance, striking such terror amongst the company that the rock was denuded in an instant of its inhabitants, the whole taking wing in a vast cloud for the sea. The Razorbills and Puffins dashed down head first under the foaming surge, to hide themselves more effectually from the dreaded enemy. This bird had so scared the community that even Gulls would create a panic, when their flight happened, by accident, somewhat to resemble that of the predatory intruder. It was self-evident that the active robber could not experience the slightest difficulty in obtaining food for himself and his young from among such masses as these.

Every year the people living on these islands take hundreds of thousands of eggs and young from the nests, without causing any apparent diminution of the feathered population. In such places as these Nature seems to have opened her inexhaustible treasures to the hand of man. Every year 30,000 Gull's- and 20,000 Tern's-eggs are taken from the breeding places on the island of Sylt: these eggs secure to the licensed gatherers a clear profit of about 200 thalers (£40) per annum. The harvesting of the eggs must, however, be carried out systematically, for too great greed often drives the birds away for a time, and sometimes, indeed, altogether. In Norway the breeding birds are never disturbed by shooting, as the inhabitants believe it to be unlucky to carry a gun while collecting birds and eggs.

At the beginning of April the birds, which have hitherto been living out at sea, begin to approach their breeding places in flocks. In May the Razorbills and

Guillemots occupy the ledges and crevices of the rocks, pair by pair, until there is no more room left. Yet, in spite of the immense numbers of which the flocks are composed, and their crowded position, there is never any quarrelling for places; on the contrary, each bird seeks to make as much room as he can for his next-door neighbour. "The sociable virtues of the Guillemots," says Naumann, "at their breeding places, are unbounded, and are not limited solely to patience towards their neighbours, or the mutual assistance which male and female readily afford one another while breeding, but also consist in the fact that one parent will continue to sit on the egg or feed the young when the other has been killed; and, what is more, in the event of both birds coming to grief there are always some pairs which, happening not to be breeding themselves, immediately take upon themselves the care and rearing of the orphan egg or bird, with just as much eagerness as if it was their own." Thus, here we find the whole society collectively engaged in promoting the welfare of the community at large, showing a humanity in their line of action, superior unfortunately, to that adopted by the human race. In spite, however, of the loving care shown by the old birds, many eggs and young are unavoidably destroyed, owing to the crowding and continuous movement among the colonists, which often leads to both eggs and young being pushed off the slippery ledge of rock which forms their cradle, and engulfed in the sea below. The rocks at the foot of these breeding places are covered with the contents of broken eggs, and besmeared with the blood of those half-fledged young which have fallen from above, and whose carcases, piled up in thousands, cause an insupportable stench.

The busy hum and noise of the birds on these rocky nesting-places only reach their maximum when the young are hatched, and they announce their hunger to the world at large,—a hunger, by the way, peculiar to themselves in its intensity, and never satiated. As they clamour for their dues the whirl of sound is increased by new notes, and the unceasing rustle of the parent birds flying to and fro on their behalf. These have to work very hard to keep up a constant supply of food for their greedy youngsters; but, strive as they may, they never succeed in silencing the young screamers.

As soon as the nestlings are able to fly, and even earlier with the Guillemots, a new page is opened in the life of Rock-birds, as we may collectively call the different species: they have so far approached maturity as to be ready to exchange their airy home for the bosom of the ocean. This change of residence is sudden, and not unattended with danger, as is shown by the anxious shuffling of the parent birds to and fro, when the time approaches for the youngster to take its first and most important flight out into the world,—its real entrance into life. With one desperate spring the young Guillemot launches itself from the giddy height, where it first saw the light, into the sea beneath: if the start miscarries the bird is hurried to certain destruction. On this account experienced old birds take great care that the irrevocable step is not taken when the tide is out, and the rocks below are exposed to view, but only at high water. Anxiously they look after the youngster, bound on its perilous voyage, and follow it with the swiftness of an arrow to the billows, which, in the case of success, receive the frightened nestling in their soft embrace. It soon returns to the surface, complaining to its parents, who followed it, of the terrible fright it has undergone in making its first acquaintance with its new home. They calm its fears, however; and the little stranger is soon reconciled to the ever-heaving ocean, its sublime and bounteous mother, learning in a very short time to win its nourishment at her hand through its own exertions.

Thus, one by one, the young birds leave the rock, which becomes daily more and more deserted, and, late on in the summer, would scarcely lead the spectator to believe that but a few weeks previous it had been tenanted by hundreds of thousands of happy creatures, who first saw light on its rugged ledges.

One would be tempted to suppose that such myriads of birds as are assembled together at these breeding places could not be exceeded in any other part of the world, and yet, if we accept in good faith the accounts given by eye-witnesses, the breeding colonies of the Passenger Pigeon of America contain numbers far surpassing what we have already described.

Wilson gives the following description of the breeding places of this bird:—" When Passenger Pigeons have made use of a locality for any length of time it affords an extraordinary spectacle. The ground is covered to the depth of some inches with their dung; all grass and scrub is destroyed; the surface is strewn with large branches, which have given way under the weight of the masses of birds which roost on them; and the trees, over an expanse of some thousands of acres, are killed as completely as if girdled by the woodman's axe. The traces of such wholesale devastation remain visible for years after, and no plant can live in these places. Not far from Shelbyville, in Kentucky, some years ago, there was one of these breeding places, covering a breadth of several English miles, and extending through the forest, somewhat over forty miles in length. Over the whole of this tract of country every tree was loaded with as many nests as the branches would support. As soon as the young were nearly full grown, and about to fly, all the inhabitants of the country side arrived in numerous parties, provided with waggons, guns, axes, tubs, and cooking gear, and, besides these, with beds and household furniture, many families establishing themselves for some days in the woods. I was told that the noise in the forest was so great as to terrify their horses; and that you could only make your neighbour hear by bawling in his ear. The ground beneath the trees was covered with filth of every description, limbs of trees, broken eggs and young which had fallen from the nests. Troops of hogs feasted upon the flesh of these unlucky youngsters; Hawks, Buzzards and Eagles were to be seen soaring overhead in all directions, taking young birds from the nest without let or hindrance. From a height of twenty feet up to the very topmost branches of the trees, nothing could be seen but a confused mass of Pigeons, and the fluttering of their wings resembled the sound of distant thunder, to which was added the crashing of the trees themselves, for a number of woodmen were actively engaged in felling those most loaded with nests, which again brought down others with them in their fall. In this manner one tree often yielded close upon two hundred young Pigeons as large as the old birds, and loaded with fat. On a single tree there were sometimes upwards of one hundred nests, each of which, however, contained only one young one. It was dangerous to walk about amongst these millions of flying, fluttering, restless Pigeons, owing to the over-weighted limbs of trees falling suddenly to the earth, often crushing masses of Pigeons in their fall; besides the disagreeableness of having one's clothes plastered with the ordure of these birds.

"These particulars were communicated to me by persons of undoubted veracity; and later I convinced myself personally that their accounts were worthy of credence. I travelled over several miles of this vast nursery, and found every tree covered with the deserted nests of these Pigeons: on several trees I counted no less than ninety on each. The birds had, as I was informed, quitted the locality for another place, some sixty or eighty miles towards Green River, and had established themselves in quite as great numbers in their new colony as there were formerly at the old one. The numerous flocks which I continually observed flying in that direction, gave a certain value to this statement. These birds had consumed all the beech-mast in Kentucky, and were now compelled every morning to fly some sixty miles to Indiana to obtain nourishment for themselves and their young. Many of them would return before 10 A.M., though the main body generally came back in the afternoon. With the object of visiting the old breeding place at Shelbyville, I had left the high road and struck a line through the forest in the direction of Frankfort. Coming to an opening by the side of a creek, called the Benson, I obtained a more uninterrupted view, where I saw a sight that perfectly astonished me. The migrating flock was passing overhead in one continuous stream and at a tremendous pace: it was several ranks deep, and so compact that I could assuredly have brought down several birds at one discharge, had they been within gun-shot. Right and left, before and behind, as far as the eye could reach, extended this immeasurable and, as it appeared, uniformly dense and mighty flock. Out of curiosity I sat myself down, watch in hand, to time the duration of this spectacle. It was half-past 1 P.M. when I began, and I watched the flight for over half an hour, during which time it seemed to increase rather than to diminish in numbers and rapidity, after which I was forced to pursue my journey, so as to reach Frankfort before nightfall. Towards four o'clock I passed the river Kentucky at that place, and still the living stream kept passing overhead, while it seemed as broad and compact as ever. At a much later hour the flock divided into separate strips; and six or eight minutes later these again broke up into lesser bands: they all, however, pursued their flight in the same direction. It was past six o'clock before the whole mass had disappeared. The great breadth of the flight led me to suppose that of the breeding place to be somewhat similar; and, in truth, several persons whose testimony I could believe, and who had not long since visited the colony, assured me that it was several English miles in width.

"If," concludes Wilson, "I only estimate the breadth of this flight at a mile, although I am quite positive that it was more, and assume that it travelled at the rate of a mile a minute, I then obtain, in a duration of four hours, a length of 240 miles. If I further calculate three birds to every square yard, one with another, I obtain for the entire flock a total of 2,230,272,000 Pigeons,—an apparently incredible number, though, in reality, probably far below the mark. Let us, then, assume that each bird daily consumes only half a pint of beech-mast, or other grain, we have a total consumption of 17,424,000 bushels per diem."

Such immense assemblages of birds are far behind the most vivid conception of our imagination. They afford us, however, a safe explanation of the origin of the Guano Islands, which, at the present time, give rise to such an immense trade, and employment to so many people, as, indeed, they will continue to do for some time to come. The importance of birds in the case of these islands is proved by calculation: the early breeding places of certain Sea-birds have thus proved to be the richest source of revenue to a State. It is well known that guano is nothing else than a deposit, during centuries, on certain islands, of the excreta of Terns, Gulls, Scissor-billed Terns, Cormorants, Pelicans, and other Sea-fowl. At this very date, the yearly quantity collected of this valuable manure exceeds half a million of tons. "This commerce, alone, demands a larger fleet of vessels than that which, in the previous century, carried on the communication of Spain with her colonies." From this description it will be seen that the contemplation of such breeding colonies has other importance than being regarded as a marvel of bird-life, showing the incredible numbers of birds breeding together in one place: in them we behold the rich source of the prosperity of entire nations, and can only thus thoroughly esteem and estimate their grandeur.

CHAPTER VI.

MIGRATION.

"And above, in the light
Of the star-lit night,
Swift birds of passage wing their flight
Through the dewy atmosphere.

I hear the beat
Of their pinions fleet,
As from the land of snow and sleet
They seek a southern lea.

I hear the cry
Of their voices high
Falling dreamily through the sky,
But their forms I cannot see."

LONGFELLOW.

DULL days come with autumn on this earth of ours; and want and poverty show their ghastly heads on the appearance of winter; yet Nature knows well, at such times, how to support her children. When those evil days arrive, in which house and home are desolate, thousands of living creatures sleep the long sleep of death, after they have deposited the seed which is to perpetuate their species,—a legacy to the future, an offering to mother Nature: some seek shelter in her lap, and others, again, wander sad and sorrowful around the desert-home. Birds, alone, are fresh and joyous;—yes, with the approach of autumn time, they seem endowed with a new and special life.

When the wind sweeps over the stubble, most of our feathered summer guests prepare for their usual migration. Before they leave, though, they once again sing their spring ditties; once more revisit their accustomed haunts, even the deserted nest; and then take their departure for sunnier climes. Few remain where they were born, singing rarely and softly the songs they sang in spring. By far the greater portion emigrate to foreign lands, whither they bear their own sweet music. The song of the Nightingale passes away with her; its tones die away with the flowers till spring comes again, bringing them both in its embrace.

It is plain that such departure and return is interesting to man: chained, as he is, to this earth, it is clear that where experience is insufficient the power of the imagination must intervene. It is only lately that we have been able to collect the results of reliable observation, though insufficient after all.

The migratory movements of birds may be divided into three classes; they are as follows: first, a regular and definite passage; secondly, one less defined and regular in its character; and thirdly, one which is very arbitrary and limited in its extent. The causes for all three alike are twofold: dearth of food in their native home, and the irresistible desire to migrate, which Nature herself has implanted in them.

The first of these three is a necessity to many birds, and is the result of an inborn restlessness developed at certain seasons: it takes a definite direction, requires no guide, and is annual. No bird of passage is taught this, nor is a leader necessary; if the bird is free, love for its parents or its partner are the only powers which can in any way arrest this longing. On this account we may regard the "passage" as one of the most poetical actions of a bird's life; its influence is so great as often entirely to change the creature's habits of life. A bird, while under this secret influence, is in a constant state of restlessness, as though torn by two conflicting desires—the wish to depart, and home sickness. To us the "passage" is, in many respects, still a wonder and a riddle; and, indeed, it seems as though the further we seek to explain it the darker and more inexplicable it remains.

The second class of migration is more imperfect in its character than the first. It has no fixed season or direction, and does not take place regularly every year, but only occasionally, terminating when the cause is removed. It consists of abandoning districts where means of nourishment are failing, and seeking others where food is plentiful; the object fulfilled, the movement ceases; and not unfrequently the immigrants attach themselves to the locality and breed there.

The third and last is mostly dependent on similar causes. It is a migration with uncertain, but narrow limits: a short flight in search of food, or some more eligible spot to dwell in than that already occupied. It takes place at all seasons, is the result of accident, and occurs all over the world. It may not inaptly be compared to the vagrant life of a strolling player.

When a bird breeds one year in one place and one in another, as does, for example, the Crossbill, one may call it, to use an expression of my father's, "leading the life of a gipsy;"* and, in truth, that sort of existence is but a limited kind of migration.

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* The reason why the Crossbills select breeding localities in this irregular manner is a matter dependent on the presence or absence of certain kinds of nourishment. Where fir cones are plentiful, the Common Crossbill is found in abundance, and but few of the Parrot Crossbill; while where the pine is common, the Parrot Crossbill predominates.—*W. J.*

It is the true "passage" which robs us of our field and woodland pets, bringing them back again to enliven and populate our lakes, ponds, brooks, and meadows; those pretty creatures, whose numerous joys and sorrows we share with them, alike at their departure and return. The number of birds of passage is very great; we may say that more than half the birds of Europe are migratory. Great and small, birds of prey and songsters, water-, marsh- and land-birds, granivorous, insectivorous and carnivorous, are alike influenced by this singular desire, and experience the same necessity to quit their impoverished fatherland before it is thoroughly denuded. Almost every family of European birds has migrated by the winter, the birds of prey following their weaker brethren.

The act of migration stands, in a certain way, connected with the business of breeding and the moult; the sooner the first is finished the sooner the bird takes its departure. Thus the "passage" of birds takes place under conditions the very reverse of many fish; take, for example, the herring; for the last migrates to spawn, while the first do so after they have bred. If circumstances cause delay in breeding the departure takes place later in the season. Many species remain in the North only so long as the business of breeding requires; others leave unwillingly, and soon return. Those birds which leave earliest return the latest; those which are the last to quit come back the soonest. The distance to be traversed has, however, nothing to do with what we have just stated, at least not always. Many birds go away early, and yet remain in a neighbouring zone; others, again, leave us later, and seek more distant lands. The seasons of the "passage" of most birds are those of the equinoxes.

The line of migration is usually in a south-westerly direction, deviating sometimes to the westward and sometimes to the southward; the line of flight generally coincides with the course of such rivers, streams, woods and valleys as take a similar direction; deep gorges in the mountains, especially when opening into a still larger valley, are much frequented by migratory flocks. If a river or valley changes its direction from south-west or north-east, it is followed until the latter direction has deviated about ninety degrees from the earlier line. The passes, no matter what direction they take, are always sought, if they form a break through a range of mountains lying directly across the line of flight. Tschudi says, that in Switzerland those roads which occupy the deepest passes are always used by birds of passage; the same may be asserted of the Pyrenees. The great number of these breaks in the mountains will not allow of our enumerating them here; the routes over the flat country may be easier named, though a glance at the map, and a reference to what has just been stated, will, of itself, be sufficient. In Germany, of all rivers the Rhine is one whose valley is the main track followed by these feathered armies; after the Rhine come the Danube, the Elbe, and the Oder; all other rivers and brooks are, however, more or less frequented by migrating flocks; in France, the valleys of the Rhone and the Garonne; in Spain, the Guadalquiver and Guadiana; in Russia, the Vistula, Dnieper, Don, and, above all, the Volga; in North-eastern Africa, the Nile; in Asia Minor, the Euphrates and the Tigris; in the rest of Asia, those larger rivers, which run north and south; in North America, the rivers Connecticut, Hudson, Delaware, Susquehannah, and the mighty

Mississippi, are, one and all, the highways of birds of passage.

It cannot be said that the "passage" takes place at any fixed time during the twenty-four hours, for birds travel both by night and by day. In general, one may say that those whose journey is least subject to interruption or attack, or those who are protected by their numbers or rapidity of flight, travel by day; while others proceed by night, in company with nocturnal birds. All the weaker diurnal emigrants make use of every wood and coppice as shelter, while the stronger fly very high.

Some species migrate singly, some in pairs, others in flocks. After breeding time, and long before their departure, the different broods unite in bands, which gradually merge together into larger flocks. These for the most part remain united during the whole voyage, separating on their return in like manner as they previously collected. With some species the sexes migrate separately: the females first, the males later, at the departure, and *vice versâ* on their return; this makes it seem surprising how the different pairs get reunited again.

Not one of our birds of passage ever breeds in foreign lands:* they scarcely ever sing there; and when they do it is only shortly before their departure, when preparing to return homewards. Many moult abroad, however, an operation which demands an extra amount of nourishment, such as they find in the richer pastures of their exile, and where they contrive to make themselves happy for the time, though a foreign soil can never replace to them their native land. The bird wanders about everywhere, though to it "there is no place like home."

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* This is scarcely correct. In Messrs. Sharpe and Dresser's exhaustive work on the 'Birds of Europe' (Part 4), circumstantial evidence is given as to the breeding of the Red-backed Shrike in Southern Africa during its winter migration. Mr. Sharpe tells us that he has young birds in his collection from this locality; and he further informs us that the Quail and other birds also breed in their winter haunts.—*W. J.*

An inexplicable longing, and to us an incomprehensible presentiment of coming events, drives the bird from us before dearth is in any way apparent, or food begins to fail at home. This presentiment is not, however, as our old preceptor Naumann imagines, limited to a twenty-four or thirty-six hours' vista into futurity, but shows itself much earlier. Birds, without having experienced any deficiency in food, or felt the effects of cold, are already preparing for their journey. It is just previous to taking their departure that they are in the finest condition; many, like the Quail, are so plump that the skin will burst by reason of the immense layers of fat underneath, if the bird is shot or falls on the hard ground. "Many," says my father,—"for example: Ospreys, Short-eared Owls, Rollers, Cuckoos, Shrikes, Woodcocks, Snipes, and different Sandpipers,—are, at this season, coated with fat, and yet they migrate." If want of nourishment is the cause of migration, birds must have already suffered from hunger, and in some degree have wasted away; but this is not at all the case; for though all birds are not as fat previous to quitting us as those just mentioned, still we do not meet with any emaciated specimens before the "passage." Thus, actual want cannot be the reason for wandering, but rather the presentiment of dearth in prospective. Cage-birds, though well fed and kept perfectly warm, are seized with the same longing as their wild relations when the season for departure comes round. As long as the "passage" lasts, so long are they restless in their cages, fluttering uneasily all night long, as though they had only just been confined; they sleep little, sing seldom, but call uninterruptedly. Birds that have been caught when full grown, as well as those raised from the nest, are alike affected in this manner; it matters not whether they be shut up in the smallest of cages or the largest aviary. Those which have been taken from the nest can know nothing of winter and its hardships; nothing of foreign lands and their sunny skies: they only know and love their master or mistress; and yet they long to wander with their companions! As soon as the season for migration has passed they become quiet again; and when the time for the return approaches they again become restless. We cannot explain these facts otherwise than that the bird obeys a hidden impulse and secret presentiment: it is true this cannot be called an explanation, but yet it is at all events not contrary to such evidence as we at present possess. It must not be forgotten, however, that this impulse and presentiment are not, necessarily, always correct. It is more probable that birds of passage are guided in their journey, north or south, by an exquisite sensibility, on their part, to the gradations of heat and cold, influences which we cannot feel to the same extent, than that they are, in this case, under the immediate direction of "Providence," and for this reason:—we have repeatedly observed that birds of passage are sometimes grossly mistaken with regard to selecting the propitious moment for their return, and suffer in consequence. They sometimes reach home in the spring, while Nature still feels the chill embrace of winter; and seeking nourishment, find none. Thus many die of starvation. They cannot make up their minds to retrace their flight,—hope against hope,—and perish! Such—

as we are informed by Count Wodzicki, one of our closest observers—was the case in the spring of 1855 :—

"The heavy and continuous autumnal rains produced a flood like the deluge of old, laying all the lowlands completely under water. Winter followed, and a terribly severe one, too; for from the 15th of November to the 1st of April snow fell in great quantities; and in February, in Galicia, we had 24° of frost. On the 27th of that month a few Peewits appeared, the thermometer showing 24° of cold: they flew round and round such sheets of ice as were not covered with snow for several days, but showed no signs of retracing their steps; until at length they all died of hunger. I have noticed that these pioneers rarely offer to return, and seem condemned, as it were, to die of want. On the 8th of March large flocks of these birds were to be seen, though the thermometer stood at 8°, and fresh snow had fallen. Many of these either withdrew again altogether, or dispersed in the neighbourhood; some few pairs remained till the 20th of March, on which day the main body arrived. It is to me incomprehensible upon what these birds fed, or where they sought refuge from the frost, for the snow laid till the 29th of March, and the temperature varied from 12° to 4° of frost."

I have still a lively recollection of the sad spring of 1837, when we were visited in my home, on the night of the 7th and 8th of April, with a heavy fall of snow, which laid on the ground for ten days. Many of our pretty insect-feeding birds had already arrived, and were thus deprived of nourishment. These poor little creatures perished by dozens; their corpses lying in every direction. This was a cruel time both for birds and human beings, causing us, in these few days, a loss of warblers, which was felt for many years after. Fortunately, both for birds and ourselves, such cases are quite exceptional; birds of passage are rarely mistaken in selecting the time of their arrival. When they leave us slowly in the autumn, lingering on the road and singing, we may almost safely predict an open winter; if they return in spring quickly, and in large flocks, one may count on fine weather, whereas, on the contrary, if they arrive in small bands, or singly and slowly, stopping on the road, and not immediately commencing to build, cold or wet may be expected. Thus, in the years 1816 and 1817, the Brambling (*Fringilla montifringilla*) remained with us till May; our native birds were very loth to build, and some, indeed, did not do so at all: unfortunately both years justified their precaution. In mild winters some of our birds of passage, which are usually very regular in taking their departure, remain with us.

Many other things would be much more inexplicable in our eyes than they really are did we ignore this presentiment, and attribute the cause of migration solely to the absence of necessary food; in which case we must necessarily assume that the journey is not prosecuted further than is requisite to find sufficient nutriment; and yet this is not the fact: migration proper is distinguished from the partial wanderings, before mentioned, by this very circumstance. I do not, for a moment, mean to assert that we have explained the cause of migration by the acceptation of the theory of presentiment, when we see the Pin-tail Duck in 11° North latitude moving still further to the southward, a bird which only breeds freely in 70°, and which could exist comfortably in the Mediterranean, and does, indeed, pass the winter there in large flocks. The correctness of this special theory cannot be taken as proved, when we see our Swallows passing three or four, or perhaps more, foreign species on their road, while the latter remain in their homes both winter and summer. I do not say that this supposition solves the riddle which gives to us the Quail, Corncrake, Water Rail, and others, while at the same time we suddenly see them appear before us in the primæval forests of Central Africa, while I and others have found Quails wintering on the cold table-lands of Central Spain, in Italy, in Greece, in Egypt, and in Nubia, besides Water Rails and Crakes, which are to be found on nearly all the lakes of Lower Egypt. One thing our theory does prove, however, that it is not want of food which compels birds to leave us and fly hundreds of miles away.

The stubble still bedecks our fields; the trees are yet green, and the cheery chorus of frogs still treats us to a sociable concert; the sun's rays are yet warm, and the nights mild: but for all this the journey is begun. The Swift has reared her brood, and taught them to cater for themselves; the young are as active and lively as she is, and the whole party now prepare to start for foreign lands. On the 1st of August they leave us, and hasten to Central Africa, as though it was their veritable home,—oh, that they did not quit us before May! Their journey is accomplished in an extraordinary short space of time: by the 5th of August I have seen them arrive in Kartoum, 15° North latitude. They are singular creatures as regards their migrating. Ever punctual, they leave the whole of Spain at the same time as they forsake Germany; yet, curiously enough, they are still to be found on the Dovrefjeld, in Norway, their northernmost limit, as late as the end of August; and they may also be seen somewhat later with us, coming from thence on their way south. They may be observed circling round the cathedral of Malaga as late as the end of October. I have seen them in the lovely valley of the Genil as late as the 18th of November. Whether they had not yet started on their outward-bound journey, or whether they had again returned there from Africa, I cannot say.

Such a return, which we might style a visit to Europe, appears to me not improbable, for I have repeatedly seen these birds in Egypt during the winter, as well as in most parts of Central and Western Africa.

After the Swift follow the Sedge Warbler, the Cuckoo, the Roller, and the Golden Oriole; next, the Garden Warbler, Blue-throated Warbler, Shrike, Egret, Squacco Heron, Purple Heron, Little Bittern, Quail, Great Snipe, and others. In the first fortnight of September, Nightingales, Whitethroats, Flycatchers, Redstarts, Willow Wrens, Turtle Doves, many of the *Scolopacidæ*, Terns, Gulls, and Ducks, take leave of us. During the last half of the same month we lose many birds of prey, as well as our little favourites the Swallow, Blackcap, Lesser Whitethroat, Tree Pipit, Golden Plover, common Bittern, several Ducks, and the Grebes. In October the following species vanish from Germany altogether:—the Buzzard, Sparrow Hawk, Meadow Pipit, Water Wagtail, Robin, Black Redstart, Lark, Song Thrush, Redwing, Blackbird, Great Tit, Blue Tit, the female Chaffinch, Goldcrests, Ring and Stock Doves, Peewit, Snipe, Rails, Moorhen, and Geese. In November all the remaining birds of passage leave us; in October, however, some of the northern birds come to us, filling the places of our absentees. To the last mentioned, Germany and Central Europe answer the same purpose as Italy, the South of France, and Spain, do to our native birds, or as Tropical Africa does to the migratory birds of the countries just named, and our home insectivorous species. Many birds wintering with us, though belonging to the same species, are not the same individuals which passed the summer amongst us, as might, at first sight, be supposed, but have been bred in the far North, and on this account find our climate suitable for a winter residence. Thus in October we are visited by a number of Great Tits, Goldcrests, Ducks, Rough-legged Buzzards, Merlins, Snipes, Water Pipits, Gulls, &c., from the north, which remain with us through the winter; while Thrushes, Ring Ouzels, Golden Plovers, Peewits, and others which arrive from the north at the same time, go further south. At this period of the year the sea-coast, and all our larger lakes and rivers, are teeming with birds. Many of the northern wanderers stop for months on the road, if they find localities to suit them. In November, besides the above named, other guests arrive, as, for example, the Sea Eagle, Bean Goose, Rook, and Jackdaw, and these are often found migrating as late as December.

Among our regular winter residents we may reckon the following:—Eagles, Buzzards (principally the rough-legged species), Goshawks, male Sparrow Hawks, Eagle Owls, Long-eared Owls, Ravens, Hooded Crows, Rooks, Hawfinches, Greenfinches, Bramblings, Chaffinches, Linnets, Redpoles, Siskins, Goldfinches, Goldcrests, Titmice, Thrushes, Dippers, Water Pipits, and Dabchicks; many of these, however, are bred in the north. The period at which migration may be said to be at a stand-still lasts but a few weeks, and by the beginning of February the immigrants have started on the return-journey, though they leave but slowly at first. The "passage" is at its height at about the vernal equinox, and lasts into May, when those which left us the earliest, return, thus terminating the migration which they had begun; for the spring "flight" is the reverse of the autumn one in all its details.

Birds wander to the south and south-west, and return from the same direction. Their winter quarters are widely dispersed, embracing even entire countries, the ultimate resting-places of many species, however, still remain a riddle; thus, as yet, no one has been able to determine where our pretty Swallows hibernate.

It is true that the common Swallow and House Martin have been met with in almost all parts of Southern and Western Africa, though as far as I know their true winter residence has not yet really been discovered. We learn from trustworthy naturalists that the first-named species appears every winter in India, remaining there until the spring, and that the Martin also is occasionally found there at the same season: it is very doubtful, however, that these two species should have migrated from Europe to India, but much more probable that they come from Northern Asia. My observations in North-eastern Africa have led me to consider the winter residents of the Nile countries as being almost all natives of Eastern Europe and North-western Asia; other experiences, gathered in Spain, and which entirely coincide with the former, lead me to believe that birds of passage do not converge from all sides to one place, but rather the different migrations form columns, each pursuing a course parallel to the rest. Thus it would result that all Old World birds of passage would fly to countries lying in a south-westerly direction from their home, and consequently those bred in the east would fly more towards the eastern portions of Africa and Europe or Western Asia. Again, the natives of the west would draw more to the western portions of the two first-named continents. Possibly, and indeed probably, this direction coincides well with the climatic changes of Asia and Africa. While the weather here in the winter season is mild and warm, in the high-lying portions of Eastern Asia, even in the south, it is exceptionally cold and severe, and in summer it is the reverse, very hot.

To explain myself more clearly, I will here enumerate, as far as I am able, those winter residents in southern countries which are natives of our own home, giving principally the results of my own experience.

The following birds winter in Spain: the Osprey, Buzzard, Kite, Hobby, Peregrine, Goshawk, Sparrow-hawk, Marsh and Hen Harriers, Rook, Chaffinch, Linnet, Corn Bunting, Reed Bunting, Sky Lark, Wood Lark, Meadow Pipit, White Wagtail and Yellow Wagtail, Robin, Black Redstart, Blackbird, Song Thrush, Redwing, Missel Thrush, Ring Ouzel, Starling, Whinchat, Hedge Sparrow, Alpine Accentor, the two Goldcrests, Wood Pigeon, Stock Dove, both Quails, Golden Plover and others of the same family, Peewit, Herons, Woodcock, Snipe, several Sandpipers, Rails, Spotted Crake, Coots, a few Gulls and Terns, the Bean Goose, Swan, Wigeon, Pintail Duck, Teal, Garganey, Gadwall, Shoveller, Shieldrake, Ferruginous Duck, Common Scoter, Velvet Scoter, Mergansers, Divers, Grebes, Cormorants, and others. In the southern portion of the Peninsula some few additional species may be met with. The winter visitants of the following countries, namely, the south of France, Italy, Dalmatia, Greece, Moldavia, Wallachia, European Turkey, and the districts bordering on the Caspian Sea, are much the same, on which account I need not enter into a more detailed description of them.

In those countries of Northern Africa lying between 37° and 24° N. latitude, among which we may include Egypt, most of the birds just mentioned are to be found during the winter season; besides which the following also hibernate there: the Imperial Eagle, Spotted Eagle, Short-toed Eagle, Merlin, Pallid Harrier (*C. pallidus*), Swift, Hoopoe, Flycatcher, Woodchat Shrike, Crested Lark, Tawny Pipit, several Wagtails, Redstart, Blue-throated Warbler, Stonechat, Sedge and other Warblers, Turtle Doves, Plovers, Coursers, all the Herons, Jack Snipe, and all water-fowl which really migrate.

The birds named in the list I am about to give migrate as far as the tropics, and a portion of them probably pass the equator: the Booted Eagle, Kestrel, Lesser Kestrel, Red-footed Falcon, Short-eared Owl, Scops-eared Owl, Goatsucker, Swift, different Swallows, Bee-eaters, the Cuckoo, Oriole, Rollers, Flycatchers, Shrikes, Tree and Tawny Pipits, Water Wagtails, the Nightingale, Thrush Nightingale, Stonechat, Whitethroat, Melodious Warbler, Quail, Crane, Stork, Night Heron, Curlew, Corn Crake, and several others which, perhaps, only reach there by accident. The winter residence of the Cuckoo, Golden Oriole, and some of the Warblers, are also as yet unknown. That certain birds of passage pass the equator is a fact which we have been able to establish, since we have had opportunities of becoming acquainted with the different species of that class which are found in South Africa.

After reading such undeniable evidence on the subject of migration, the question rises to our lips, and not unnaturally, Why do many of our birds of passage travel so far into the interior of the glowing continent of Africa? That they find food, and to spare, much more to the northward is certain, and yet still they persist in continuing their journey hundreds of miles further. What is it that they seek, when they can find what is necessary so much nearer home? To these questions we can for the present give no satisfactory answers.

We have, however, learnt something more of the way in which birds travel. The next thing we have to examine is the manner in which they assemble previous to starting on their voyage. Who among us has not observed Swallows before their departure, when gradually collecting together they at length form numerous flocks and settle in the morning, or towards evening, on the roof of the old church? For hours they keep circling round all the houses in the village where they have bred or been reared, as though taking a final look round and bidding adieu to the old haunts; another meeting is next held, after which one and all seek a new roosting-place,—some large pond thickly overgrown with reeds and bullrushes, where they "camp out," as though they had already started on their journey. Our other feathered penates, the Storks, also congregate together before leaving. The individual members of this assemblage come for miles round to the same spot, where, after having apparently held council, they each return to their several homes; this is repeated several times, until one fine day the whole body take their final departure, inviting the laggards to join them as they pass by. Starlings conduct themselves in a very singular manner, they vanish regularly with their young soon after the nesting-season, from the places where they have bred, for the purpose of moulting, when they congregate with other families in bands, associating restlessly with Pigeons, or more frequently with Rooks. At such times they keep flying from one part of the country to the other, roosting at night in the reed-beds. For weeks together not a Starling is to be seen in front of its breeding-box,* but in the beginning of September each pair returns to its old home, singing as in spring, creeping in and out, and sleeping there, while the young, who have moulted in the meantime, still keep in flocks. In the middle of October these flocks are again joined by the old birds, when the whole mass take their departure.

During the "passage" these migrating bands always keep together: this may often be remarked even in Germany, but it is still more striking in the South, for on the great main routes of migration scarcely a day passes without large flocks being seen pursuing their journey. These companies afford an interesting spectacle. Many birds preserve such strict order during their flight as to be worthy of imitation: while on the wing they generally form their masses into the shape of the letter V, one member of the community taking the lead, and the remainder following in such order as not to leave a broken space in the sides of the triangle, though the length of either line is continually changed. Inasmuch as it is evident that this wedge-like disposition of their forces is only adopted so as to facilitate their passage through the air as much as possible, it naturally follows that the leader becomes sooner fatigued than his companions, and must, therefore, be relieved by them in turn. The mode of flight just described is that adopted by our

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* In Germany it is customary to place a small box on a pole in the garden for the Starlings to breed in.—*W. J.*

Wild Geese, Wild Ducks, Cranes, and others, during their journey; if, however, their numbers are not excessive, they then often fly in a straight line.

All large birds do not assume a definite form or figure in their migratory flight. Storks, whose flight is exceptionally beautiful, break the monotony of the journey by different changes. After flying together for several miles, perhaps, they all of a sudden, one and all, commence one of those splendid aërial *ballets* which show their masterly powers on the wing. They do not, however, lose sight of their purpose amid this recreation, but manage with each successive sweep to advance rapidly, and soon vanish from the view of the spectator. A large flock of these birds in the act of migrating affords a most charming spectacle. Birds of prey, when in large bands, behave in a similar manner when on the passage.

The conduct of Rooks and Jackdaws while migrating is very singular. They generally fly at a great elevation, and straight forward. Suddenly a member of the crowd dashes down several hundred feet with closed wings as if shot; one after another they follow suit, and in less than a minute the whole company are flying at a height of not more than a hundred feet from the ground. The flock now proceed on their journey, gradually rising again to their former altitude, when the sport begins afresh. In addition to this, every bird of prey they meet with on their way is mobbed and driven off. All these amusements are, however, always carried on in the direction of their migration.

Small birds travel in whirling and in confused flocks, so much so as to leave considerable open spaces between the different batches. With a flight of Swallows one little fellow is always seen some fifteen or twenty paces in advance of the main body. When travelling slowly they catch insects on the way; whereas other birds are obliged to alight to seek their food.

Those birds which migrate by night generally rest during the day, and those which travel by day do so in the afternoon. The latter start again before daybreak, flying without a halt until mid-day or the afternoon, when they rest from their labours; if anxious to get on, however, they continue their journey towards evening, so as to get over a few extra miles. Most strong birds and good flyers travel by day, as we have before remarked. Under certain circumstances, however, they sometimes fly by night, like Sky Larks when they fear bad weather, in which case, though, they fly singly, and not in flocks as they do in the daytime. Cranes also travel by night when they are in a hurry, or have been disturbed at their roosting-place. The only true nocturnal migrants are the Owls and Goatsuckers, as well as bad flyers, such as Kingfishers, Buntings, Quails, Moorhens, spotted Crakes, Bitterns, Night Herons, Snipes, Ducks, Dippers, Ring Ouzels, Missel Thrushes, Blackbirds, Blue-throated Warblers, Robins, common and Philomel Nightingales, Whitethroats, and others of the warbler family. All these creatures hardly sleep at all during the period of migration: this may be gathered from observations made on caged birds at this season, when they are cheerful the whole day long, and restless all night. In general the passage of night migrants is much more rapid than that of birds travelling by day, owing to the interruptions the latter meet with from attacks of birds of prey, and by halting to seek for food.

Unfavourable weather or adverse winds hinder alike migrants of both classes—nocturnal and diurnal. Clear fine days and bright calm nights are advantageous to the journey; head-winds are, as we have before stated, not contrary in the sense of being impediments to the bird's advance, but those blowing in the same direction as the birds are travelling are so. That such winds (north-east and east) render their journey much more laborious is proved by the weakly state of those Larks caught, and the poor condition of those killed, which have had to battle with them for several days. Birds of passage further prove this by the way in which they are led away from their real route by a due south or westerly wind, as well as by valleys and river-beds. A head-wind is a real necessity in the case of long migratory flights. Both foggy and boisterous weather in some measure alter the mode in which the "passage" is conducted. Thus on dark nights all cautious, and especially shy, birds, fly close to the ground, whereas in the daytime, or on clear nights, they often fly so high as to be almost invisible to the naked eye, their presence being detected solely by their call-notes. They do this, doubtless, from prudential motives. I have learnt this when shooting Cranes at night. If bad weather lasts for several days most birds of passage remain quite quiet, occupying themselves wholly and totally with feeding. It seems as though they were laying up store against the days of travel they have in prospect, when unwonted energy and strength will be called in requisition, for they cease not to feed the livelong day, laying on a goodly coating of fat, which, however, under the influence of extraordinary exertion, disappears as rapidly as it accumulated.

We have now described the mode of migration pursued by birds who make their journey wholly on the wing. It is not only highly probable, but in part proven, that many birds cover considerable distances of their route to the south and back, by swimming and running. All Divers, Grebes, and Cormorants, use such rivers, lakes, and seas, as lay in the right direction for the purposes of migration as much as possible. They have been observed to ascend and descend rivers without abandoning the surface of the water for any great length of time. Inasmuch as they are excellent swimmers, such a mode of travelling is rapid enough for them, and has the advantage of enabling them to feed on such fish, insects, or other aquatic creatures, as they may meet with on the way. Water is to them a high road, upon which they may pursue their usual calling.

It is much the same with running migrants. It is true we have had but few opportunities of observing this latter class, but at the same time we cannot doubt but that they prefer using their powerful legs to exercising their limited means of flight, so long as this is possible. The Landrail, whose croaking note we so often hear in our meadows and corn-fields during the spring, is ever shy of taking wing, and is rarely seen unless flushed by an active dog; and yet I have met with this bird in Spain and Egypt, aye, even in the interior of Africa in 12° North latitude, and then only during the season of migration. How could the creature ever have got there, had it not rather walked than flown, for in good truth it can scarcely be said to fly at all! Our Quail is also to be met with at the same season in Spain, Greece, Egypt, and Kordovan. One may see immense flights of these birds arrive on the coast from over the sea, and yet I have never met with a migrating flock of these birds in the interior of Africa, though I have been on the look out for them both by day and night. Quails alight in the fields on the coast, and run on, hundreds of miles!

My father gives the following, the result of his own observation, as proof of the fact of birds migrating on foot:—"One autumn I received a Moorhen, which had been caught by the hand in a wood-shed, that lay not very far from a small brook. This bird had evidently migrated running; it had heard the rippling of the water, and, running towards it, entered the shed, however, instead, where its progress was arrested by the back wall. A Spotted Crake was once caught in a similar manner in a house, the back-door of which was provided with a hole to allow of the ingress and egress of the Barn-door Fowls, while the front one opened on to a rivulet. The bird had evidently got there in the same way as the Moorhen had entered the wood-shed. Had these birds been migrating on the wing they would have alighted on the banks of the stream, as Water Pipits, Snipes, Ducks, and others do."

Birds like to travel under the auspices of the most experienced of their class; if possible, of those whose habits are similar, and whose society is not fraught with danger to themselves. This is done by several of the smaller Marsh-birds, who attach themselves to larger, more intelligent, and especially shyer species: they migrate with them, and avail themselves of their guidance to foreign lands. We see something similar to this when our Starlings pay their late summer visit to the Rooks, going about with them in the fields, and apparently regarding them as their leaders.

Thus these happy creatures wander joyously and without difficulty to foreign climes: they come back home in a much gayer humour, however, and twice as quickly as they went. The impulse on the return is then so exceedingly strong as sometimes to drive them beyond the limits of their homes. Faber saw Swallows arrive in Iceland, where they spent some little time, but did not breed, and soon disappeared again; Hoopoes are seen at Drontheim and on the Loffoden Islands; Bee-eaters in Germany, England, Denmark, and Scandinavia; American and Siberian Thrushes occur in Northern Europe; and with us other examples have been noted, where birds have gone beyond their usual circle of distribution. Undoubtedly the inclination to pair at this season hastens the return journey, and possibly occasions such useless extension of the same.

In most points the homeward voyage appears to be prosecuted in a similar manner to the outward bound one. Those birds which leave us in pairs return in pairs; many, like Larks, Thrushes, Nightingales, Whitethroats, Blue-throated Warblers, Chats, and others, sing at every resting-place on the road; and one and all make as much haste as they can. In short, the return is a matter of greater interest than the departure. Gradually the north, so deserted in winter, gains new life, old friends return to their habitations, and everything goes on again as usual.

Are these birds, however, which have just returned, the same individuals which left us: have they been really able to find their old homes again? I answer from conviction—yes: they are assuredly the same birds which seek out their former nesting-places. This is proved by their behaviour on their arrival in spring, to which I have already referred. Storks take such decided possession of the old nest on their return, that one cannot doubt for a moment that it does not by right belong to them, or that it is not a house and home already well known to them, whereon they alight. "The Starlings," remarks my father, "do not think of building: this only enters their heads several weeks after their arrival. No; they rejoice at having found the old familiar home. 'Yea, the Sparrow hath found her house,' says the Psalmist. They creep in and out of the little box: the male sits on the top of the tree in which his residence is, and the female seems quite at home in the locality. It is just the same with Swallows. The Sand Martin recognizes the hole, even, in which its nest is, from amongst the rest, and enters it without the slightest hesitation. The common Swallow, which has bred in an outhouse, enters the same through the partially-open window or door, and greets its old nesting-place with evident pleasure. 'The Swallow has found her nest, where she may lay her young,' says the Psalmist again."

Besides these we have other proofs. The bird-fancier and expert knows with certainty whether the Nightingale singing in his garden is a passing stranger or an old *habitué*. Our immortal Naumann knew all his little feathered friends, near his house, by their song. The Melodious Warbler, which we have before especially mentioned as breeding in our enclosure, was known to us by the inferior quality of its song, and on this account was called by us the "bungler:" the strain, indeed, was so execrably bad, that the few rich notes, which it did possess, were rarely heard, and then only by fits and starts. This bird visited our garden regularly during nine consecutive seasons. Thienemann once so tamed a Swallow that he could distinguish it from any other: it returned to him three years running. A bird-fancier reared two young Chaffinches from the same nest, and wishing to ascertain their sex plucked a few feathers from their breasts: as soon as, in one case, the new plumage appeared of a gray colour, denoting the female sex, he let her go, and hung the cage containing the other out of the window. The female was, however, so accustomed to feed in the cage that she came to it, and, putting her head through the bars, fed with her brother. The cage was then removed to the window-ledge and the window opened: the female still followed, and by degrees got used to the room. In the autumn she took her departure with other Chaffinches; and next spring reappeared at the old spot, and fed with her brother as before. When breeding time came she built her nest in the neighbourhood of the cage, and fed both herself and her young from the same. For four seasons she departed and returned again regularly, always behaving in the same manner; and it was only at the sixth spring that she was missing.

Such examples prove that the same birds which leave us in autumn return in the spring, if alive, to their old haunts. How this occurs we cannot explain; we do not know how the bird finds its way back over such an immense distance: and this remains another riddle, the answer to which we are still awaiting.

In Asia the different migrations take place, as with us, under circumstances essentially the same in most particulars, and the direction also is almost the same, were it not that birds do not fly quite so far to the southward as their European representatives: this is owing to the fact that Southern Asia offers a greater variety of localities suitable to serve as winter quarters than Africa does. South China, Upper and Lower India are the countries whither most of the native birds of passage of Northern Asia betake themselves during the winter season. No less adapted to the purpose are the shores of the Caspian Sea, Lake Ural, and also Japan, all which places are well adapted for a winter residence. I have grudged no pains in thoroughly examining such works and statements of competent naturalists as I have had access to, and give to the reader the results of my researches.

The following species visit the south of China during the migrating season:—the Imperial Eagle, Sea Eagle, Lanner, Peregrine Falcon, Hobby, Sparrow Hawk, Hen Harrier, Short-eared Owl, the Little Owl of Japan, Iotaka Goatsucker, our Cuckoo and other allied species, Wryneck, Shore Lark, Richard's Pipit, Red-throated Pipit, Tree Pipit, Siberian Thrush, Japanese Thrush, Pallid Thrush, Redwing, Red-breasted Thrush, Naumann's Thrush, several Flycatchers (natives of Siberia, Kamtschatka and Japan), a Redstart, Swedish Bluethroat, Ruby-throated Warbler, different species of Sedge Warblers and Willow Wrens, the Mountain Finch, Linnet, Siskin, Scarlet Bullfinch, Crossbills, several Buntings (natives of Siberia, Kamtschatka, Japan and Northern China), the North Asiatic Starlings, Sand Grouse, Quails, Cranes, Plover, Golden Plover, Oystercatchers, Avocets, Curlews, almost all the shore- and water-birds of Northern Asia and Europe, Godwits, Woodcocks, Jack Snipe, Phalaropes, Spoonbills, different species of Herons, divers Grebes, Goosander, Merganser, Smew, Common Swan, Hooper, Bewick's Swan, Snow Goose, Graylag Goose, Bean Goose, White-fronted Goose, Lesser White-fronted Goose (*Anser minutus*), Swan Goose (*Anser cygnoides*), and most of the northern Ducks.

Many of the above-named breed in North China, and are content to migrate to the southern districts of that country: a few pass through without stopping the winter. China is, in this respect, like Europe, its northern portion resembling our north, and its southern tracts the three peninsulas of the Mediterranean and its southern coast-lands.

According to Jerdon, 'History of the Birds of India,' the following species pass the winter there:—Peregrine Falcon, Hobby Hawk, Kestrel, Red-footed Falcon, Sparrow Hawk, Hen Harrier, Marsh Harrier, Short-eared Owl, Scops-eared Owl, Common Swallow, Martin, Sand Martin, Common and Alpine Swift, Goatsuckers, Bee-eaters, Roller, Cuckoo, Hoopoe, Rock Thrush, Red-throated Thrush, Black-throated Thrush, Naumann's Thrush, Redwing, Fieldfare, Stonechat, Redstart, Swedish Redstart, many of the North Asiatic Sedge Warblers, Willow and other Wrens, Gray Wagtails, Yellow Wagtails, Tree Pipit, Richard's Pipit, Red-breasted Pipit, Rook, Common Starling, Sardinian Starling, Rose-coloured Pastor, Black-headed Bunting, Meadow Bunting, Little Bunting, Scarlet Bullfinch, Mountain Finch, Short-toed Lark, Quail, Pratincole, many different species of Plovers, Demoiselle Cranes, Common Crane, Woodcocks, Jack Snipe, Ibis, Curlews, Ruff and Reeves, Dunlin, Little Stint and other allied species, almost all the shore birds which are to be met with in Germany, Godwits, Black Stork, White Stork, Spotted Crakes, Moorhens, Coots, Graylag Geese, Lesser White-fronted Goose, Pink-footed Goose (*Anser brachyrhynchus*), Ruddy Shieldrake, Wild Duck, Gadwall, Wigeon, Teal, Garganey, Bimaculated Duck, Red-crested Whistling Duck, Pochard, Scaup Duck, Tufted Duck, Goosander, Merganser and Smew, Great-crested Grebe, Black-headed Gull, Great Black-headed

Gull, Caspian Tern, Common Tern, and Little Tern. This list does not include those species which descend from the mountain districts of India to the lowlands, as they may probably be coupled with the birds of passage. How many of these last pass from over India and the Malay peninsula towards the Sunda and the other islands of Australasia, we do not at present know: that some do, however, we are convinced.

The birds of North America migrate as regularly, and in equally as great numbers, as those which inhabit the northern portion of the Old World. The season of migration is much about the same as with us; but a certain portion only of the mass of birds of passage travel in a north-easterly and south-westerly direction. Unless compelled by necessity, no land-bird, nor for that matter aquatic-bird either, ever passes the broad ocean; they all, on the contrary, keep to the land as long as possible. The principal retreat of the North-American migratory birds is to the country bordering the Gulf of Mexico, and especially Mexico itself, which, lying as it does within three different zones, possesses great variety of climate. Some of these birds, however, go as far as Central America and the West Indies, and even Venezuela and New Granada. These last—as well as those which have taken up their quarters in Mexico, Texas, Louisiana, Mississippi, Alabama, Georgia, and Florida—all take a more or less north-westerly and south-easterly direction.

Whoever is acquainted with the American representatives of those families whose Old-World members have been designated birds of passage, will not require a list of the North-American migrants. One will rarely err in assuming that all the birds of the Western Hemisphere whose habits resemble those of the birds of passage of the Old World, migrate every autumn to the south, returning again in the spring. Add to these such species as are entirely foreign to us,—but whose requirements, however, render a winter residence in the impoverished tracts of the north impossible,—and we have a list of the North-American migrants, which will be correct in the main; for the birds of passage of both hemispheres are almost, if not quite, the same.

As to the migratory season, and the manner in which the journey is performed, &c., it will be sufficient to bear in mind what we have already said with regard to the birds of passage of the Old World.

In the Southern Hemisphere there are also regular migrants, though their number is limited, and for the reason that those countries—situated in a portion of the Globe, where the rigour of the climate necessitates migration—possess comparatively but few birds of any description. Those species which are unable to defy the icy bonds of the winter season move to the northward, returning south again in the spring. Very few birds remain on the inhospitable islands of Terra del Fuego between the months of March and September. The wingless Penguins, even, leave Terra del Fuego, as well as the Falkland Islands, after the breeding season, and swim to more southern seas. In Patagonia and Southern Chili—aye, even the Argentine republic—many of the birds which breed in the summer move northward on the approach of winter, and seek shelter in warmer climes. The same rule holds good, according to Gould, in South Australia, in spite of the favourable situation of New Holland: here, also, several species migrate regularly to the southward, visiting the southern portion of the Continent and Tasmania in the summer to breed, moving north on the first approach of winter. Thus, we see, they are governed by much the same laws as our own birds of passage.

The "passage" in many respects resembles the second and partial migration before mentioned.* This may be especially remarked in the case of those birds which are obliged to descend from the mountains to the lowlands on the approach of winter, returning to the highlands again in the spring. In our part of the world these may, without exception, be classed with the second and third class of migrants.† In the southern districts of America, and probably to a certain extent in India, they become veritable birds of passage. According to D'Orbigny we are told that every year at the same season, when the true South-American birds of passage take their departure, all the different Thrushes, Starlings, Warblers, Flycatchers, Swallows, Goatsuckers, Kingfishers, and others, leave the heights of the Southern Andes for the low ground; those inhabiting the southernmost portion of the range moving south and north; and those occupying the mountains lying to the northward shifting chiefly west and east of their real home, some even reaching the lowlands along the coast of the Pacific. The regularity of their journeys in respect of season and direction is such that they can scarcely be counted among the wanderers of the second class, but much rather resemble the true migrants. None of these birds ever breed in the lowland districts, or are to be found there during the nesting season; in short, their whole conduct is identical with that of the true migrants. In the north of the Andes the same thing probably occurs; and in the Himalayas we are well aware that a similar movement takes place.

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* The three classes of migration understood in German under the following terms—Zug, Wandern, and Streichen—have no distinct rendering in English, and are but expressive of one action—migration—in three degrees of intensity.—*W. J.*

† German:—Wandern and Streichen.—*W. J.*

The difference between migration proper and the second class of migratory action among birds is, as we have before remarked, shown by the irregularity of the latter. When in high latitudes the unusual severity of the winter hides from view the thousands of plants and millions of seeds which could furnish food to numbers of birds, these last are forced to move southwards, where they remain and breed, sometimes never again returning to their old haunts. While on the road they halt wherever they find food, often remaining weeks in one locality, until all means of subsistence have vanished. In this manner we find the Redpole and Siskin wandering from one birch-wood to another, from one alder-tree to another. If they find sufficient nourishment in the north they do not come to us. This is the reason why we do not see them every winter, or, at all events, not in the immense flocks which occasionally visit us. Exceptional circumstances, also, oblige other birds, whose true home lies still further north, to come to us; because, however, this is not a usual occurrence, and because the feathered strangers are accustomed to regard man with distrust, they inadvertently attract observation, and their presence is regarded by the common people as next door to a miracle, which they in some way connect with the old mystic number seven. Thus, with us, it is a saying that the lovely Waxwing and the curious Nutcracker appear every seven years. Close observation has, however, taught us that this is in no way the case.

The number of species which may be reckoned as partial migrants is incomparably less than that of the true birds of passage. Among our native birds we may count the Sea Eagle, which only occasionally leaves its breeding-place and wanders to the southward or westward; the Goshawk and Sparrowhawk, the Snowy Owl and Hawk Owl, which visit us in most years; the Great Black Woodpecker, which still occasionally passes through localities where it has become almost extinct; the Pine Grosbeak, a rare visitor in Germany; Redpoles and Siskins; and, lastly, the Eider Duck, Razorbill, and Guillemot. All the remaining European birds which quit their homes are either true migrants or belong to the third class * of wanderers.

We have not, as yet, received sufficient information, the result of observation, to enable us to determine, with any degree of certainty, the cause of the second description of migration.† It is probable that those birds acting under its influence usually remain at home, where they find sufficient nourishment: with some species this can, however, scarcely be, and yet they are rare visitors with us. Sometimes a series of years passes, during which not a single bird of a certain species is to be seen in places where it had been formerly observed. My father remarked that during a period of forty years he never met with an authentic case of a Redpole in our part of the country: after this, however, they made their appearance in thousands, though only to vanish again as suddenly as they came; since which time they have never again honoured us with a visit. As yet, we are only certain of one thing, and that is that during a severe winter we are favoured with more northern visitors than in a mild one: beyond this we know nothing. "The winter of 1847," says my father, "was an extraordinary one: the Lesser Redpole made its appearance as early as October; and, later, came

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* German: Streichen.—*W. J.*

† German: Wandern.—*W. J.*

in such numbers that in the forest of Thuringen they were caught in thousands, and sold by the basket. In some winters they are scarcely ever met with at all."

Partial migrations of this class seem to take place in the north more frequently than in the temperate zones: they also occur in warm climates. In Finland, in some winters, Black-game—which in our part of the world only move within comparatively narrow limits—pack together and travel southwards. On the Loffoden Islands, in Greenland, and Newfoundland, Ptarmigan appear, under similar circumstances, in hundreds of thousands, and remain for weeks together; after which they gradually disappear again, with the exception of a few stragglers. Passenger Pigeons never frequent the same forest for more than ten consecutive years: they arrive suddenly, rear millions of young, and vanish again for a long and uncertain period, after they have consumed such nourishment as the neighbourhood may afford. Wild Turkeys assemble in troops of hundreds and traverse vast tracts of country, separate in the spring and breed in forests, where they have previously been almost exterminated, disappear again, and balk the expectations of those who await their return in future years. In 1838, when Gould visited the Liverpool Plains of South Australia, he found the Grass Parakeet breeding in innumerable quantities, a place where, until then, a single solitary specimen only had been found, which was sent to Europe. At the same time he found the Harlequin Bronzewing (*Phaps histrionica*) in such countless numbers, that they formed the main-stay of his *cuisine*. Colonists and natives alike assured our naturalist they had never before seen these two species in that district. In 1833 a small Rail (*Tribonyx ventralis*) suddenly made its appearance in the fields and gardens of the colonists on the Swan River, a locality where this species had been hitherto unknown: these birds came in myriads, laying the grain crops in one night, and spreading devastation around. They withdrew, and did not return again for many years. Some years ago several Sand Grouse were shot in Holland, they had come from Tartary, and were supposed to have lost their way. In 1863 we received information from all sides that these birds had arrived in large numbers all over Central Europe. They sought out favourable places for nesting, and bred in the country; by the autumn of the same year, however, they were found only very thinly distributed; and in the following year but few pairs were to be met with at all. Their disappearance was as inexplicable as their arrival.

Many similar instances may be brought forward, showing the irregularity of such migrations. Those already given, however, will, I think, suffice to demonstrate the character of the second description of migration. The arrival of true birds of passage may be calculated to weeks, aye, within days even. The arrival and departure, however, of our wandering friends cannot be determined any more than their reasons for changing their quarters.

The third and last class of migration* is much easier explained than the above, and for this reason,—because it is much more regular in its character. It takes place, as I have before remarked, during the entire year, and over the whole world. Old bachelors are ever on the move; nothing attaches them to any given locality; they are ever desirous of change,—seeking, possibly, either to enter the sweet bonds of wedlock, or to do battle to win the favours of the fair. The great facility with which the loss of the male bird is replaced could not exist but for this rambling propensity. This partial migration has been, also, carefully observed, especially in the cases of the larger birds of prey, owing to their attracting universal attention: they wander, even in search of food. The larger a bird, the more extensive the area over which it ranges when seeking nourishment. With some *Raptores*—and it may be said more especially of Vultures—*finding* the said nourishment is more a matter of good fortune than with other species. Before the Vulture can feed, a carcase must exist for him to feed upon; and on this account their daily ramble is a long one, and embraces a wide field. Other birds, after the breeding season, roam with their families,—like the Starling, when it associates with Rooks, under whose guidance it implicitly places itself, and to whose excessive caution it is much beholden: the Starling flies hither and thither with the Rook, without giving the slightest thought to the old breeding-box at home, at other times so dear to it.

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* German: Streichen.

In the winter, when the males of many species separate from their wives, who are bound south, the temporary widowers roam from one place to another. The zone so traversed may be of almost any extent,—sometimes greater, sometimes smaller: it often does not extend over the eighth of a square mile; in other cases it covers a considerable tract of country. Titmice and Golden-crested Wrens ramble in this manner, even while on the "passage," from the northern slopes of the mountains to the southern and sunnier side, where food is to be found; Woodpeckers, sometimes, cover a space of over ten miles in their peregrinations. Certain places, such as warm springs or sunny mountain-slopes, are visited daily in this way, as well as favourite roosting-places: Woodpeckers will even go so far as to dig out sleeping holes, where there are none ready to hand, or make themselves at home in strange domiciles: take, for instance, the case of a Green Woodpecker, which used to roost every winter in our Starling box.

This style of roaming is undoubtedly the pleasantest of the three different classes of migration, as may be easily imagined, while observing birds or listening to their joyous strains. Their food is within reach, and they experience all the pleasures of change without feeling the bitter pangs of home-sickness; they have shelter,—what more do they require? The Yellowhammers, Chaffinches and Sparrows that frequent our farmyards in winter are not such objects of pity as some good souls would think, though this pity does not in reality come amiss, for it tends to check the detestable love of destruction, and secures to these pretty creatures some amount of protection.

From what we have said it will be seen that all birds are subject to this last kind of limited migration,—both true birds of passage and migrants of the second class, at home as well as abroad. Finally, thoroughly to understand the meaning of this last migratory movement, it only remains for us to consider those birds which are neither true migrants nor belong to the second class, but only roam in the manner aforesaid, if they ever quit the place of their birth. Of these we may mention the following, which are natives of Germany:—the Golden Eagle, Long-eared Owl, Eagle Owl, Tengmalm's Owl, Barn Owl, Kingfisher, Raven, Carrion Crow, Magpie, Green, Gray-headed and Pied Woodpeckers, Nuthatch, Tree- and Wall-creepers, Green Finch, Tree-sparrow, Rock-sparrow, Linnet, Goldfinch, Yellowhammer, Crested Lark, Wren, Dipper, all the Titmice, Partridges, and possibly the Shearwater.

In the warmer zones the third class of migration resembles the first and second in many respects, without degenerating into either. In the tropics our winter and spring are replaced by the rainy and dry seasons. It must be borne in mind, however, when making the comparison, that the dry season is the time of scarcity instead of plenty. The dry season, which is equivalent to our winter, obliges birds to quit their usual haunts, as it causes a dearth of food, sometimes compelling them to migrate hundreds of miles in search of it. In this manner the small Black Stork (*Ciconia Abdimii*), which nests on the conical roofs of the straw huts of the Aborigines of East Soudan, migrates in the commencement of the dry season to the southward towards the far interior, a district as yet little known to us, where water is probably plentiful. In the same way, and at the same season, the Sacred Ibis withdraws from Sennaar, as it had previously done from Egypt. Many Bee-eaters also retire with the Storks; and when the heavy rains swell the mountain streams the Stork and the Bee-eaters return with the rising flood; and to this day the Sacred Ibis heralds the approach of the Nile god. This might be classed with the first and second kinds of migration, were it not that these birds, as well as many others, always stop in their native district when water is to be found during the dry season, the necessity for shifting their quarters being thus removed.

From the experiences and careful observations made by Prince Maximilian, of Neuwied, we learn that Brazil is, in this respect, governed by conditions different to those which rule Central Africa. A country where the climate is so equable, that one can scarcely discern any distinction at all between the different seasons, presents at all times such great advantages to its feathered inhabitants, that they remain from year's end to year's end, more or less in the same locality: they are under no necessity to migrate further afield. This explains the fact, that though the lowlands of Brazil afford an asylum to divers visitants from the southward, as also from the Andes, at certain seasons of the year, yet there is no need to impose a temporary exile upon the native species. "Swallows and Cuckoos," says the prince, "are permanent residents in Brazil; the Storks never abandon the districts where they have bred; and every songster sings its simple lay the whole year round. The native species are either permanent residents, or such as belong to the third or last class of migrants, the two first classes being unrepresented." Accidental and local, though regularly recurring, causes,—possibly, indeed, the innate desire for change,—give rise to a certain amount of migration within narrow limits. "The continuous succession of thunder-storms, accompanied with deluges of rain, renders the atmosphere of the primæval forest cool and damp; the earth steams and reeks with moisture, and never dries at this season. The feathered tribe now abandon the forest and seek the open country, where a plentiful supply of oranges, bananas, guavas, and other luscious fruits, present attractions not to be resisted. Thus, at this time of the year one may say that there exists a regular migration to the inhabited districts. That such a movement takes place at different seasons in different parts of Brazil, according to the climate, is easy to be understood: it usually coincides with the degree of latitude." The magnificent Macaws, many

Parrots, Toucans, and others, leave the forest, where they live in pairs, at a certain season, called by the Brazilians, "O tempo dos passarinhos," or the "bird season," and uniting in large flocks advance boldly in the open country. Certain especial fruits will tempt the Macaw, usually so very shy, far from the borders of the forest; Parakeets attack the plantations of Indian corn in large flocks; the small Warblers, Starlings and Toucans lay the above-named fruit-trees under heavy contribution; Finches and Grosbeaks levy their tax on the rice-fields. These migrations, like those in the north, take place after the breeding season, in the beginning of summer, if one may use such a term.

Besides the spontaneous migration of birds there is yet another kind of travel, which we suspect is not wholly an act of free will: I allude to that which gives us our cast-away visitors. Thus, we have often observed single specimens of a species in a country hundreds of miles from its native land; in some cases even separated from home by the whole breadth of the Atlantic Ocean.

The Cream-coloured Courser, a native of the sandy deserts of Africa; the Sand Grouse of Spain; the Houbara Bustard (*Otis houbara*), bred in the Steppes of South-western Asia,—have all been shot once or oftener in Germany; the Glossy Ibis of Hungary, in Iceland; the American Wood Duck has been killed near Berlin, and the Giant Petrel found dead on the Rhine. Arctic birds have been found on the coast of Spain; Siberian species have been met with in the west of Europe; sea birds of all sizes have been seen far inland; and land birds on small islands in the middle of the ocean. The number of American birds found cast away in Europe is very considerable.

What may be the causes which combine to drive a bird so far from its home it is impossible for us to say. Storms at sea, doubtless, drive aquatic birds inland; but how a small Thrush manages to get from America to Northern Asia, and travel half through Europe, still remains to us a mystery. There is so much in bird-life, however, which is dark and mysterious; how much more so, indeed, must be these apparent errata of Nature.

CHAPTER VII.

LIFE IN FOREIGN LANDS.

> . . . . "where fly
> The happy birds, that change their sky
> To build and brood; that live their lives
> From land to land." . . . . . .
>
> TENNYSON.

THE bird leaving the country where it was reared migrates to a foreign land, and has but one advantage over man under similar circumstances,—it seems well acquainted with every place, or at all events soon becomes at home in a strange country.

The agile Swift whirls around minaret and date tree with apparently the same indifference as though it were circling about the old church tower at home; the Eagle finds itself equally at its ease in the palm "tope" as in the pine forests of the North; the Golden Oriole hides away amongst the thorny branches of the Mimosa with the same facility as amid the thick foliage of the oak in Germany; the Wild Duck swims just as happily in the sacred waters of the Nile as on the glassy surface of pond or lake at home. One and all, they soon accustom themselves to their new habitats, find their food, and seek their roosting-places, as though they had been long residents in a foreign land. With all this they seem perfectly aware that they are strangers in the country, and show plainly that they are not by any means wholly and totally contented with their lot, but would rather be at their old homes. The brightest skies are not always unclouded, and the earth in every land is sometimes chary of her hospitality: many a northern stranger finds, even in the south, stormy skies, rain, cold, starvation, and misery, against which it has to contend.

Every bird when abroad seeks a locality corresponding in character to that which it selects at home, and in this temporary abiding-place carries on its duties, and passes its existence as it does in its native land. Birds of prey settle in forests, and on the banks of rivers and lakes; Swallows, intermingling with Bee-eaters, wander about in the unknown regions of Central Africa; Golden Orioles, Cuckoos, Rollers, Flycatchers, and Shrikes, betake themselves to wooded glades, especially in the primæval forests; Larks and Pipits love the fields, the Water Pipit moist and marshy spots; the Yellow Water Wagtail trips along the banks of a mountain 'burn,' the common species courts the neighbourhood of buildings standing in the fields, while other Wagtails winter in swamps and on heaths; Redbreasts, Redstarts, Rock Thrushes, &c., in the mountains; Starlings frequent the fields on the plains; Stonechats seek desert and solitary places among rocks, &c; Warblers choose woods and copses; Doves and Pigeons, woods and rocky precipices; Cranes and Storks prefer rivers bordered by wild steppes; marsh- and water-birds frequent swamps and lakes.

Egypt—"that land situated like a bivalve between two shells"—is one of the principal winter-quarters chosen by birds migrating from the north. There the wanderer may suit his own taste: rugged and barren mountains, leading down to richly-cultivated and wooded plains;

bright blooming meadows bordered by the burning desert; the mighty Nile with its countless channels, and the coast of the Mediterranean with its lakes and marshes, flooded by sea and provided with fresh water from the Nile. These last mentioned are of considerable extent, and separated from the sea only by narrow belts of land: they abound in fish and other aquatic animals, and form a favourite resting-place for numberless birds which obtain nourishment from their waters. On the land side a lake of this description terminates in a shallow, muddy inlet, into which some one of the numerous irrigating channels of the Nile empties itself, or else it joins on to the swampy paddy-fields, and rich, reedy swamp: the whole is encircled with a forest of palm trees, which thus gives the finishing touch to this paradise of the wandering feathered swarms. Although these lagoons are far from being deserted during the summer, they are not then nearly so densely populated as during the winter season by the migrating flocks. It appears to me utterly impossible to form any true estimate of their numbers; it would seem as though all the birds of the earth had made a general rendezvous along this coast. The sportsman or naturalist who passes a few months in these regions is astonished, and can in nowise comprehend how hundreds of thousands of birds can exist on a single one of these lakes, consuming, at the lowest computation, over 60,000 pounds weight of fish per diem, let alone other kinds of food.

As soon as the brilliant Oriole and active Swallow, acting as heralds, bring the news that the wanderers from the north and north-east are preparing for the usual journey, these hospitable spots begin to receive their winter guests, as they arrive in swift succession. Quails make their appearance in such numbers that a good shot may kill over thirty in an hour, or more could he only load fast enough. The Sea-fowl come in such flocks as to darken the sky; Cormorants, true tenants of the ocean and skilful fishers, appear in thousands. Almost all the different species of Ducks observed in Germany are to be found here, flocking together, with others of their own, or allied, species, in such countless myriads as literally to cover the surface of the lagoon to the extent of a mile or more. Imperial Eagles, Vociferous Sea Eagles, Peregrine Falcons, and Lanners, as may well be supposed, frequent places so rich in game, and earn their daily meal with but little trouble. The mighty Imperial Eagle is the scourge of the Wild Geese and Flamingoes, which he seizes and overpowers with facility. The Sea Eagle sits motionless on the shore, carefully shunned alike by great and small. The Osprey, with its powerful talons, is looked upon with comparative indifference, owing to its attentions being exclusively directed to the finny tribe: it may be seen resting on a stone or stake ashore amongst the Ducks, without their ever troubling themselves in the least about its presence. The Falcon, on the contrary, spreads dismay around: dashing, like a flash of lightning, from above, it seizes its prey without the slightest difficulty from amongst the living crowd. Besides Ducks, every moist spot teems with marsh- and water-birds of all descriptions. Hundreds of Waders frequent the shores of the lake; occasional Godwits may be seen leading a troop of Plover; while our Peewit greets its spur-winged cousin with vociferous cries. A little deeper in the water stand the Avocets, in company with the equally long-legged Black-winged Stilts, catching aquatic insects. Still deeper immersed in the flood may be seen the Spoonbill, with its shovel-like beak; and behind it, again, a single long scarlet line is extended, composed of thousands and thousands of Flamingoes.

Large flocks of Pelicans can be seen fishing in company in certain portions of the lagoon. It is only those who are well acquainted with the immense numbers which compose these flocks, and with the outrageous appetite of each individual, who will accept my statement of the amount of fish consumed by birds in a day, as not being an exaggerated one. In no other part of Africa have I ever seen such vast numbers of Pelicans collected together as on the Lake of Mensaleh. Although at the season of the overflowing of the Nile a flock of from a thousand to twelve hundred is not an uncommon sight to be met with on the inundated plain, still it is nothing when compared with the flocks on the Lake of Mensaleh, where they cover the water to the extent of a square mile or more, looking, at a distance, like gigantic water-lilies. If anyone shoots at them they rise *en masse* with a rushing sound, not unlike the rolling of drums, which may be heard a mile off: besides these birds you will possibly see a few Swans and Wild Geese; as well as numberless flights of Gulls and Terns in the open water.

A greater variety of species, if not as many individuals, are to be found sheltered in the reedy marshes, swamps, and paddy-fields, which border the lake: they are literally alive with birds. In every rice-field Full and Jack Snipe are to be found in hundreds; the Curlew and Scarlet Ibis are not so common, although small flocks of the latter, numbering from twenty to thirty, are to be seen occasionally. The different Herons seek out the deeper and more open places, and stalk gravely about, with their necks bent into the form of an S; while the

Great Egret, who furnishes the well-known and costly plumes, hides itself amid the thickest reeds. The Bittern returns to the darkest recesses of the swamp, and their companion, the Night Heron, sits with ruffled feathers and closed eyes on the tops of the sycamores, often in the middle of a village; now and then blinking up at the sun it peevishly half-closes its eyelids, as though annoyed that the great orb had not already retired beneath the horizon. The Little Egret and Squacco Heron steal quietly about the fields; the Buff-backed Heron (*Ardea bubulcus*) of Egypt walks about quite at its ease, neither fearing nor heeding the passing sportsman. Among the reeds one may see the Lesser Cormorant climbing up and down their stems, by its side the Black and White Kingfisher, and possibly our own home species on its travels. Blue-throated and Reed Warblers, Pipits and Wagtails, and other small birds, are also seen. Gulls and Terns fly hither and thither overhead, uttering their harsh, wild screams; the Marsh Harrier glides noiselessly by; while Geese and White-eyed Pochards are feeding along the shore; and on the islands, numerous Sandpipers and other Waders are running to and fro.

Swamp and marsh may really be said to be alive after sunset, when swarms of Geese, Ducks, Gulls, Terns, Cormorants, Herons, and other marsh-birds, which have been dispersed all over the lake during the day, retire to rest in their reedy beds. The uproar at this hour is terrific: screaming, croaking, quacking, drumming, whistling, and calling, resound on all sides; the clear, shrill notes of the different shore-birds make themselves heard amid the general hubbub, and the deep bass of the Pelican is also to be distinguished from the mass of sounds. Gradually quietude steals over the swamp: the first uproar subsides into a sort of sociable hum; and the screeching drops, little by little, to a murmur. Now the nocturnal animals commence their concert: the wild boar, the jackal, and the night-birds, begin to raise their weird voices, and make merry among themselves after their own ghostly fashion. The Night Heron has had its sleep, and dreamt the day away; it now spreads its wings at the first approach of darkness, and departs on its midnight rounds. Creaking and croaking, the nocturnal band quit the trees and hie them to the swamps in search of frog and lizard, thereby continuing a chase only just relinquished by the diurnal fraternity. In company with the former the Bittern, Thick-kneed Plover, and, if the moon be up, the Spoonbill, with numbers of Plovers, go out on the feed. Long before sunrise they again abandon the swamp; but by this time the day birds are wide awake, and make you aware of the fact. Thus voices are heard both night and day.

The islands, also, covered as they mostly are with low scrub, have their residents as well: these are different Warblers; and in the green meadows Pipits and Wagtails wander hither and thither, sure of food and shelter.

This congregation of different species lasts almost the whole winter through, until the sun, gaining strength, gives the signal for departure to some, and draws fresh visitors from the south. By the end of February the Cormorants already begin to collect together, and form themselves into immense flocks ready for the journey. Every evening they may be seen flying in long strings to their roosting-places: their numbers, however, diminish daily. The Pelican is now ready to start; and the Flamingoes disperse gradually day by day. Every night the whistling sound of Ducks homeward bound strikes upon the ear. As the marshes dry up, so, in the same measure, their tenants depart. By the middle of March the southern wanderers begin to arrive. The Quail seeks the wheat-field; the Common Swallow skims the waving billows of ripening corn-fields; every bush is alive with songsters; and in the beginning of April the last of the northern emigrants take their departure.

These gigantic places of assemblage for migratory birds, without doubt rank higher in importance than the mountain ranges of Southern Europe, though the latter are also much frequented by birds of passage. As soon as the "passage" commences numerous flocks of northern birds seek an asylum among the hanging woods and slopes, which, owing to the power of a southern sun, are free from snow even in the winter time, and thus find a resting-place as suitable as could be met with amongst the lagoons and swamps. The following winter guests are to be found in thousands amongst the rocks and precipices of the Sierra Nevada:—Redbreasts, Redstarts, Wood Pigeons, Chaffinches, Linnets, Blackbirds, Ring Ouzels, Song Thrushes, Redwings, Hedgesparrows, Buntings, Wagtails, Meadow Pipits, Water Pipits, besides occasional Eagles, Falcons, and Owls. A detailed description of these mountains is unnecessary; and I think it will suffice if I tell the reader that they are very similar in character to our highlands, with the exception of the timber, which differs from that of the North,—consisting principally of evergreens, ilex, oak, elm, and chestnut; the slopes are all covered with low scrub, rich in insect-life. Our little pet, the Redbreast, is so common in the "Sierra" during the winter, that every good-sized bush is sure to be tenanted by one of them.

In the forests numerous flocks of Finches and Redwings are to be met with; and every bubbling brook and rill harbours Water Wagtails, both yellow and gray. In the lower valleys the Swift and Rock Swallow may be seen disporting themselves late in November; and, indeed, it is possible that the last-named species passes the winter there. At the foot of the spurs the list of northern birds increases, for to that already given we may add the Woodcock, Peewit, Sky Lark, Wood Lark, Starling, and Quail, besides the Blackcap, all of which are seen there in December, and, doubtless, remain the whole winter. In the same manner the other two South-European peninsulas may be said to afford ample shelter to winter visitants, as I find my experiences confirmed in every respect by those of other observers. It is true that in Italy the little feathered strangers are subject to a much greater amount of persecution at the hand of man than they are in Spain. On the Balkan peninsula they lead a still quieter life; the sparse population, and especially the Mahommedan portion of it,—in accordance with their ideas of hospitality,—treat the wanderers in such a manner as to leave little else to be desired.

The last winter asylum of our pretty feathered truants, that came under my own personal observation, resembled, as far as powers of attraction go, the lagoons I have before described. The forests of the interior of Africa—with their rivers and fresh-water lakes, I may say seas, interspersed with desert tracts—unite, in fact, all that can be considered desirable in the bird-world, and tempt the wanderer to stop for weeks and months together. I will give a description of it to the best of my ability.

Central Africa possesses two seasons,—the dry and the wet: the first may be regarded as answering to our winter; while the second can only be compared to our spring. Each is opposed to the other, inasmuch as the one destroys, and the other generates life: the power of generation, however, exceeds that of destruction. The productive agent is water; the destructive one is the sun, together with the south wind. Water is the well-spring of life in the primæval forest,—not the river, nor the lake, but the discharge amid thunder and lightning from the dark heavy clouds which hang suspended like a pall over the land during the rainy season, enveloping the whole country, as it were, in one sheet of falling water. The spontaneous life thus generated cannot be even conceived by one who has not travelled in the tropics: the earth, burnt, scorched and blistered for months by the glowing rays of the sun, springs to new life; the power of the elements for good is manifested, as it were, by magic: the flood appears like a magician from Paradise sent to replenish the earth. The first drops awaken the plant-world from the death-like sleep into which it has been cast and held bound by the drought. After the first shower the parched ground is covered with a carpet of green, the trees renew their foliage, and everything now revels in plenty. The tops of the densely-leaved mimosas are interlaced with a veil of creepers, whose blossoms are radiant with equatorial splendour; flowers and fruits sparkle like jewels; on all sides insects burst from their chrysalides, and awaken from the dull, dream-like existence of their former state to the brighter pleasures of active life, humming and skimming from tree to tree, while the native birds prepare to build their nests. From every bush one hears a note, and extraordinary sounds from above strike on the ear, though the eye cannot detect the musician. Plants and animals live and bloom once more:—it is spring; but what a spring! Words are wanting to describe it in all its radiant beauty. The interior of the forest is an impenetrable secret, for it stands protected from intrusion by dense belts of thorns, and gigantic thistles interwoven with creeping-plants; the narrow beaten tracks, however, by which the jungle is intersected, as well as the sounds one hears during the still hours of the night, vouch for the presence of the elephant and the lion, the panther and the hyæna, jackals and monkeys, who one and all are engaged in their different occupations. The notes in the daytime, produced by numberless species of birds, are less easily determined, for it requires long and careful observation for a person, not a native, to distinguish them properly.

In this season of universal life and plenty the northern wanderers make their appearance in thousands: they have no reason to trouble themselves about either food or shelter, and need only follow the example of their neighbours in everything. In the morning the Crane and the Stork both leave the forest for the plain, where the Quail has already taken up its abode, and where it seeks food for the day; Eagles, Falcons, all the murderous small fry of Shrikes and Flycatchers, the Warblers, also, find what they require in the forest, and to spare. The first, catch with ease such vertebrates as they stand in need of; and the latter find insects in plenty, which, we may also add, form the principal sustenance of the Kestrel and Lesser Kestrel.

Booted Eagles may be seen hunting in pairs; and here and there one meets with a stray Peregrine Falcon, who, in its love of travel, has rather overshot the boundary of its circle of distribution. Our northern friend, the Kestrel, may be met with everywhere, but always in flocks, and often in company with the Lesser Kestrel, though never associating with the native allied species. It is with a certain amount of pleasant surprise that one discovers that the Owl we have just flushed from the plain is none other than our old friend and acquaintance the Short-eared Owl (*Otus brachyotus*), and sometimes one is fortunate enough to come across a family of the pretty little Scops-eared Owl, which has chosen the thickly-leaved crown of a tree for a hiding-place during the day. The Swift may be seen pursuing its rapid flight out of the true migrating season, as also the Common Swallow,—the two South European Bee-eaters (*Merops apiaster* and *M. persicus*), both in mixed flocks, collected in every available and eligible situation; the Roller is met with in similar localities; and here and there Cuckoo and Oriole may be found in the woods. Each herd of cattle is accompanied by our Yellow Wagtail, and almost every other European species of the same family; in every suitable meadow and sandy heath the Tawny and Tree Pipits, or any of the European migratory *Saxicolinæ*, are to be found; the Shrikes sit perched on some prominent branch, in accordance with their usual habit; while the different Warblers thread the denser thickets, hiding themselves from observation. Upon the islands, on the banks of the streams, by the side of and on the fresh-water lakes and ponds, the same sort of bustle and life may be observed as that which exists on the Egyptian lagoons, though the company collected on the latter is somewhat more varied than it is here. The live-long day, the traveller descending any of the streams will see either side lined with, and every island in the stream covered with, hundreds of thousands of Wading and Swimming Birds. A similar sight may be witnessed in the forests, and on the rivers and streams of Southern Asia.

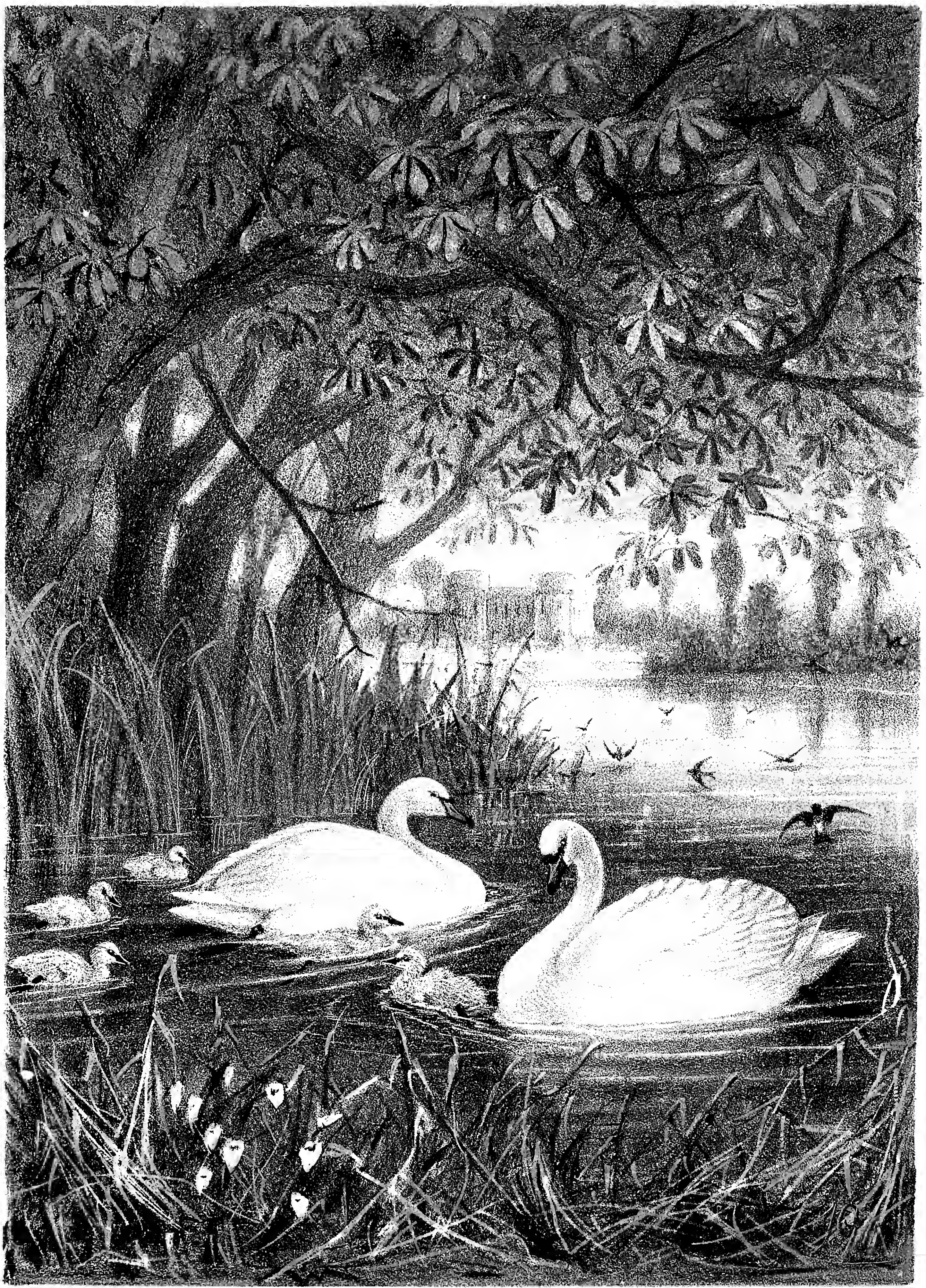
It is a matter of marvel that birds are so well able to find places where they can feed on the line of march. In the case of aquatic birds it is easier to understand, for large sheets of water are without difficulty distinguished from afar by the higher fliers; it is also comparatively easy for those birds which live in meadows, or among corn-fields and woods, to make their selection. How, however, the berry-eating birds discover every mountain ash, or the Reed Warbler spies out the most hidden clump of reeds and flags, is not so easily to be understood. If we happen to be in a district abounding in springs and ponds we may feel sure of finding marsh- and water-birds there, the migrants are certain to have found them out. Thus it is explained why, in southern countries, one can always shoot water-fowl in good condition, although it sometimes happens that many fall victims to the over-crowding of certain localities, and hence to want of food. In the Red Sea I have seen Rooks and Buzzards starved to death; by the Lake of Mensaleh I have found the Tufted Duck, which has perished from exhaustion, brought on by want of food. As a rule, however, we may assume that shelter and nourishment in a foreign land is, as far as birds are concerned, of the very best.

Had the feathered wanderers no other danger to encounter than the above, they might be considered fortunate indeed. Such, however, is not the case. While on the journey they are subject to dangers of all kinds. They have first to pass the Alps, after which the whole breadth of sunny Italy lays before them: her fair bosom is, however, rife with perils; death lurks in every bush; all Italy is but a den of cut-throats;—whatever living thing can be killed is destroyed;—the townsman leaves his trade, the lazy priest and greasy monk his cloister; in short, everyone is on the watch for the unfortunate birds of passage. Spain, indeed, is but little better; and if the Greek does not participate in the universal slaughter, it is by reason of his laziness solely. Those birds which have safely run the gauntlet of the murderous bands of Southern Europe, are still in no small danger from the sea, which engulphs many thousands of exhausted victims.

Unconscious of danger and, therefore, free from care, the bird of passage wings its way. It soon becomes accustomed to the change of climate, as well as of food; sharp and quick it soon selects the most desirable localities in the south, wherein to take up its abode: in short, it understands the art of travelling and living abroad; and yet life abroad is not its true life, and the bird is well aware of the fact that it is not at home. As long as the wandering lasts, so long is the cheerful, happy spirit wanting; the little travellers are only really happy when living in pairs, when love speaks in every note of the springtide song,—when in their real home.

Most birds assemble in bands while on the passage; many species moult; all are silent: no songster gives utterance to a note. Not a single migratory bird makes a new home; *not one builds a nest or breeds in a foreign land!* They seem to await with impatience the hour of departure for home. They become more cheery as the time approaches; they seem inspired with fresh life; the old spirit of song is awakened, and they sing. Is it love which has this strange power? or is it joy at the speedy return in prospect,—the sweet hope nourished amid home-sickness? Their joy is unmistakable. As early as January

I heard the Song Thrush and Starling, near Toledo, begin their piping lay; in Egypt I saw the last named even in February, sitting on the back of a buffalo, robed in its bright purple-coloured vest, singing a bright spring carol, replete with every note of a northern spring. The nearer the time for departure the louder the outburst of song in the south. Every little stranger clears its throat: the Lark sings the while it wings its spiral flight; the Wood Lark warbles its lovely sonnet. One and all awake to song. The old sadness vanishes; all want and winter's cares are forgotten; the male encircles the female; the primæval power of love has turned even a foreign land into a paradise. And, now, all will soon be silent in the south. One after another the little exiles take their departure for the land where they first learnt to sing; one after another they leave the foreign shore, and seek their much-loved home.



J. Keulemans lith. M & N Hanhart imp.

SWANS.

PART V.

MAN AND THE BIRD.

CHAPTER I.

BIRDS AND POETRY.

> "Die schönere Natur warf in die Seelen
> Sanftspiegelnd einen schönen Widerschein."
>
> SCHILLER.

MAN can only associate, so to speak, with the higher and more intelligent classes of animated nature, for between him and the lower creature there is a gulf fixed too deep to admit of any communion between the two. Man always at first either seeks an intellectual relationship with animals, without which the connection is incomplete; or the animal which he seeks to attach to him must labour for him, be of some essential service to him, either by its intelligence or by its physical powers. The ever-faithful dog—who has sacrificed itself in man's service, and without whose agency and assistance certain districts of the earth would remain uninhabitable—has to thank his own intelligence, his own noble nature, so often, alas, misunderstood, for the secret friendship shown to him by man. The scarcely less noble horse bears the warrior forth to battle; and no representation of a conqueror is complete if unaccompanied by his companion in danger—the horse. This creature, like the dog, may thank its own utility for the questionable privilege of being tamed and broken, *i.e.* cursed by becoming subject to the good or evil humour of its master, and being held at his service!

The remaining mammals are all more or less under the subjection of the lord of creation, and bound to render him their best allegiance, aye, body and soul, if they would receive shelter and care at his hands, and not be destroyed from off the face of the earth! On no occasion has man ever brought about an intimate connection between himself and any animal, unless it be for his own interest and profit. The huge elephant must place his mighty strength at our disposition, aye, and even capture his own flesh and blood for our benefit. The camel is pressed into service, and, as the "ship of the desert," bears us over the arid sandy plain. We heap a heavy burden on the back of the ass. The ox must bow his stiff neck before the yoke, and furnish man alike with meat, drink, and clothing. The sheep is robbed of its fleece to cover our nakedness. The helpless goat must, at man's command, leave the sunny green slopes of the Alps, among which it passes its bright active life, and, descending to the valley, afford milk for his children. The llama of America must unite in one the properties of sheep, goat, donkey, and camel, so as to satisfy man's demands. In short, all must work, slave, pay toll, give, allow themselves to be bullied without limit, so as to earn his *friendship* forsooth!

With how few mammals has he, however, ever condescended to be intimate; how few has he admitted to the honour of his friendship and consideration! With most he lives at open feud, whether to guard against a mighty force still free from his control, and therefore antagonistic to him, or to attain any of his thousand other aims and ends.

With birds it is different, however. Man counts but few of them among his enemies, and never pursues them —that is, a true and noble-minded man—with that animosity which he shows when crushing under his heel the head of the adder, or following the wolf to the death. The predatory Eagle, even, though at feud with the weakest members of man's flocks and herds, is killed in fair fight; it is no war of extermination. The joyous huntsman, his trusty rifle in hand, advances to the attack, and lays in wait for the enemy, his heart and soul in the sport: a bullet ends the Eagle's career;—no common trap, cudgel, or poisoned bait.

The generous-hearted man is, and ever has been, a friend—yes, a true friend—to birds, though occasionally indulging in the chase of the same. He is bound to these lovely creatures by ties which are never loosed, but rather, on the contrary, strengthened every day. The good-will he bears them is an inheritance of ancient days; for long before the naturalist began to watch and observe his feathered favourites, the poet did the same, as also did the man of common sense. All looked on birds with the simple-minded glance, one may say, of a child, and, charmed and attracted by its grace and the beauty of its plumage, flew with the bonny creature, in spirit, over hill and dale, by land and sea: the poet addressed sonnets to it, which are the reflections of its own inmost melody, showed it hospitality, took it into the house, or sought to catch the truant, enticed by the summer breezes, with net and snare, thus taming and attaching the feathered beauty to himself. In this way arose the bond of friendship, which exists in full force at the present day, between man and birds.

The most indifferent person cannot deny that the form and colour, action and habits of the bird, possess an indescribable charm over us. The form combines in itself beauty, grace, and lightness; the colours of the plumage challenge the very blue of heaven's vaulted home, the purple tints of the morning, the blossom of the flower, the brilliancy of the sparkling jewel: it would seem, indeed, as though bounteous Nature had showered down the contents of her cornucopia upon the feathered creation. Side by side we see form and colour, and those birds not endowed with either we find gifted with all the powers of song,—perhaps the most wondrous gift of all. Thus each and all possess some one gift or another, which causes us to admire and love the whole feathered creation,—beautiful and attractive creatures that they are. We call the Parrakeet pretty, from the brilliancy of its plumage, quite oblivious of its hideous screaming note, uttered with a perseverance worthy a better cause, and which we bear with under our very ears, though, at the same time, we turn with disgust from any mammal whose voice is similarly disagreeable; we call the different Finches, especially the smaller species, lovely creatures, and are charmed at first sight by the Golden Oriole, the Starling, the screeching Glossy Starling, and the Bower Bird; we allow ourselves to be so enraptured with the plumage of certain members of the Crow family as to call them Birds of Paradise, and are much amused by the true Crows and Ravens, in spite of their common-place appearance; admiring, for their beauty, the more gaudy members of the class, although we are aware of their unamiable qualities. Birds of Prey, though apt to injure our property, yet come in for a certain amount of consideration. The Swallows win our love, although their plumage is not of the most brilliant description; their nocturnal representatives we regard with a certain amount of wonder, though not with aversion. To the plumage of the song bird we pay not the slightest attention, though our favourable impressions are strengthened if, in addition to a fine song and graceful movement, it possesses other charms. The Woodpeckers with their quaint dress attract us in no small degree. The Humming Birds charm everyone who has seen them, and make a poet even of the naturalist. Among the numberless soft-billed birds there is scarce one that does not exact our admiration. Pigeons and gallinaceous birds become household pets; and marsh and swimming birds are almost without exception favourites, and valued by us.

It is clear that such attractive beings possess a greater amount of influence over the uneducated mind than over the minds of such as are thoroughly conversant with their history: the uninitiated can observe, though unable to explain what he sees, and on this account the bird appears to him a wonderful, if not supernatural, being; and as his actual knowledge is at fault, poetry steps in to his aid and embellishes. The bird when used as a type is chosen according to its nature and character, flight as well as force being symbolical: old symbols are still retained by reason of their selection being a happy one. Poetry placed the Eagle by the throne of Jupiter, holding in his talons the thunderbolts which the Deity was supposed to rain down upon this hapless earth of ours: the allegory is apt, for the Eagle, himself a mighty king, dashes upon its prey, like a flash of lightning, with resistless power. The Eagle still presents to our mind a splendid picture of strength and nobility: the body raised proudly erect; the stiff pendant tail; the ruffled lance-form feathering of the head and regal piercing eye, which serves to stand guard over the motionless body: these ever bring before us the different attributes attached to the symbol. The Eagle Owl, ruler of the night,—as the Eagle is of the day,—has, from time immemorial, been connected with weird stories of the wild huntsman; and though we have stripped the Owl of its horrors, we still look upon it as a fit emblem of all that is underhand, cowardly, and ignorant; for, like the spirit of evil, it glides on the silent night, under cover of the darkness, and seizes and strangles in their sleep the birds of the light who jeer it by day. We hate the Eagle Owl as much as we can hate any bird; whilst when we look at its cousin, the Athenian Owl, we can perfectly understand how the Greeks looked upon the latter as the emblem of reflection, and the favourite bird of Minerva.

In this manner the poetry of our ancestors has, in a way, spiritualised many other birds, and none more so, or with more genuine feeling, than the Swan. The beauty of its form and purity of its colour has made it the favourite of all ages and all nations, a position, indeed, which it holds even to the present day. According to the Icelanders the note of the Swan (*Cygnus musicus*) resembles the sound of a flute or violin, though, in truth, it is much more like the harsh cry of the Goose: the note of the allied species is but rarely heard, hence it is often called the Mute Swan, though the poet accords musical powers even to this species. As the tale goes, the tongue of the Mute Swan is loosed at its last dying hour: the parting plaint passes from the stiffening corpse, and borne by the evening breeze mingles with the ripple of the waves upon the shore, and forms a song. The attributes of the Swan do not in any way, however, consort with its pure white colour, for the bird is wild, shy, and passionate; and yet it has been made the hero of the myths of a thousand years: wherever we meet with it, whether in the maze of fairy tale, myth, or legend, the Swan is ever the subject of poetry. Zeus, father of the gods, chose that form as a disguise, under which to win a fair maid's virgin love; the demi-goddesses came as Swans to our land from the distant South, seeking fresh youth and beauty in the waters of the enchanted lake; a Swan drew the skiff of the nameless knight of Grale, who granted the prayer of the noble maid for care and protection; the Swan is always considered as the messenger sent to a maiden, or as a representative of the maiden herself. The exalted position in which we find this bird placed is, doubtless, a tribute to the beauty of its form and purity of colour, although its haunts have assuredly something to do with the matter. A lake surrounded by tall chestnut trees, limes, maples, or alders, its shores fringed with sedge, its bosom decorated with water-lilies, and Swans swimming proudly and gracefully on its surface, is a sight which cannot fail to strike the eye of the beholder with pleasure; and this especially at night, when the glistening gleam of the bright moonlight, glancing over the rippling water, lends a secret and magic charm to the scene. The poet's imagination, however, metamorphoses Swans into fair maids bathing, who, ensnaring both heart and sense, seek to decoy him with bright glances and graceful motions, and beckon to him to join their revels: thus the legend is explained.

This is an example in which we see how the *form* of the bird has become emblematical amongst us. The strong poetic feeling which exists amongst the Arabs leads them to surround everything, which appears to them incomprehensible, with the flowery drapery of legendary lore, which has long since merged into fairy tale: this is received with credence, and is more or less intermingled with their very existence. It is not only cradle lullaby, but forms the principal source of entertainment and conversation among grown men by the watch-fire, and becomes universally extended from tribe to tribe. The stranger hears it from the lips of the oldest sheik, and, unpretending as the tale may be, it sounds as the words of wisdom. We take things as they are, and do not trouble ourselves uselessly to seek to explain the inexplicable; we laugh at those who would regard every creature from a purely utilitarian point of view. The Arab, however, is less easily satisfied, and seeks to interpret everything, even the extraordinary, to the best of his ability.

In Northern Africa there is a species of Plover known to naturalists by the name of the Spurwinged Plover (*Hoplopterus spinosus*), which name indicates its peculiarity. Like the rest of the family this bird is restless and noisy both by day and night. We, on examining the spurs on the wings, content ourselves with assuming them to be weapons for the bird's defence. But to the Arab this explanation is not sufficient: "Why," says he, "are not other Plovers similarly armed?" His traditions answer him, and give him the why and the wherefore: "All creatures, even the dumb," says the legend, "praise the Lord of the Universe, whose excellence is declared by the mouth of his prophet,—God's peace be with him! But, just as, amongst men, God punishes those who know Him and do not serve Him with humility, so He punishes animals also, as examples to the children of Adam, should they not render Him due praise and glory. There is one bird amongst the fowls of the air to whom the great Giver of all Good allotted the banks of rivers and flowery meadows as a habitation. One day all the birds assembled on an extensive plain to praise and glorify the Sublime Being: every bird but one appeared, the exception being the Spurwinged Plover. This latter only arrived at the end of three days, giving as an excuse that it had been overcome with sleep. This was a lie, however; and the angel Mekihr, whose province is to try souls on the day of judgment, complained of the sinner before the throne of Allah; upon which the judge placed a spike or spur on each wing, saying: 'Thou didst elect to sleep when all other birds were assembled to render me homage, therefore thou shalt never sleep again!' O, believer! go into the fields, and behold the condemned one,—ever seeking rest, and lamenting his sin! Go, then, and glorify God in all humility."

The following explanation, as given by the Arabs, in one of their legends about the Ostrich,—the giant among birds,—is still prettier, because more poetical. We do not know why the Ostrich is so striking in appearance, habits, and conduct; why it is so different from all other birds, so singularly feathered, is so shy of man, and cannot fly: the fairy tale, however, will give us all the necessary information on these points. "In the days of old," so say the mollahs of the Bedouins, in their tales by the watch-fire, "in the days when the goodness and mercy of God the All-merciful, God the All-gracious, was great towards man, a sinner from the day of his creation, the Ostrich, under grace, lived at peace with the other animals of the desert, his companions. At that time he possessed powerful wings, and could fly better than any other creature, better even than the Bustard, his dearest friend. One day the latter said to him: 'Brother, if it is agreeable to thee, to-morrow, Inshalla! (please God!) we will fly to the river, drink there, have a bath, and then return to our children.' 'All right,' said the Ostrich; 'we will fly to-morrow,' without, however, adding the words 'please God,' for he was proud, and did not bow himself before the power of the Almighty, 'Whose glory the angels in heaven announce, and whose praise is sung by the thunder and the lightning;' because he, till now, had only felt the effects of the boundless mercy of God, and put his trust in his own strength and his powerful wings. The next morning the two birds got ready for the journey: the pious Bustard saying, before he had even spread his wings, 'In the name of God;' the Ostrich, however, said not a word, and laughed in his sleeve at his companion. He rose, cleaving the air with his mighty pinions, directing his course towards the sun,—the 'eye of God' himself: his heart was full of pride, and he forgot the benefits he had received at the hands of the Dispenser of all Good. The measure of patience and long-suffering was full to overflowing, and changed to anger towards the impious creature. Higher and higher the Ostrich ascended, as though he would enter the habitations of the blessed, when the avenging angel of the Lord approached him. At the command of the Supreme he tore away the veil which hung between the bird and the sun's rays, so that he was struck with their full force: in an instant his pinions were burnt up, and he fell miserably to the earth.

"To this day he cannot fly; and thou canst still see the mark of his fall upon his breast; the burnt pinions and singed feathers are still visible; and to the present day he seeks with giant strides to flee from the wrath of the exasperated Deity."

In this manner, amongst the Arabs, fairy tale and legend explain every visible wonder of creation; and, in my opinion, their elucidation is as good as any we can give. These myths are remarkable for the way in which the golden thread of faith is interwoven throughout the story, and that the name of God's messenger to man is constantly mentioned in their charming poetry.

According to our ideas the movements of a bird fascinate quite as much as its form. We are charmed with the graceful canter of the stag or roebuck, and still more with the rapid stride of the gazelle. But what is such motion other than being anchored to the clod,—cleaving to the earth? The bird is furnished with other tools, and gifted with a means of locomotion, for which man yearns from his inmost soul.

The flight of the bird is the most beautiful, the most perfect of all movements in the animal world; for it seems to spiritualise the perishable frame. To this I ascribe the fact that man has ever, from the very beginning, been envious of this same power, looking upon it as a godlike gift, and that he has even sought to determine the course of the future by its instrumentality. We often laugh at this childish superstition, forgetting that to this very day thousands place full belief in flight auguries, and that our imagination accords the gift of wings to the departed soul!

When the ancient Egyptian priests sought to explain the mysteries of flight to their pupils,—when the Roman augur, or the Druid of our forests, sought, through the aid of the flight of birds, to read the fate of nations in the pages of the future, and the result fell devoutly from his lips, it was, possibly, in his eyes no empty ceremony, and the words he gave utterance to were no deliberate tissue of deception practised by him, though, even in those days, some members of the priesthood were well able to profit by the ignorance of the credulous. The knife of the anatomist had not, in those days, laid bare to the eye that most delicate net-work of muscles, whose mutual and intermingled action, at the bidding of the nervous system, is productive of flight. At that time man did not see in the feather of the bird, the hair of the mammal and the scale of the lizard; by him the bird was still regarded as a godlike incomprehensible whole,—a servant, a messenger from heaven. Mercury, the courier of the gods, was represented with winged feet. The marvels of those days have subsided; the fairy tale, the mysterious, has disappeared, though the poetry still remains. To this day the angel is represented to the christian child as descending from the throne of the All-loving Father, and bringing peace to the wearied soul, and a balm to the sorrow-stricken heart. The messenger of the christian God is depicted with golden wings.

And we, with all our education and knowledge, taught that wings are denied our godlike forms, still cast almost envious glances at the flock of Swifts which take up their summer quarters in the walls of the old ruined tower at home, and sport about with lightning flight, startling us every now and then with their shrill screams, and calling off our attention from our work. At first we are annoyed at the noisy interruption, but anger is lost in wonder at the rapidity of the evolutions; the gratification of the eye assuages the irritation of the ear. Soon we no longer hear the cry in all its harshness: the further and further they fly the softer it becomes, until in the distance it sounds even pleasant. Such is the power of that most poetical of all movements—flight!

This power is felt by all men, be they Nature's untutored children even, in quite as high a degree as with ourselves. All birds which are remarkable for their powers of flight awaken a feeling of poetry, and the longing to possess the wondrous gift, or become the subject of a legend.

The Bateleur Eagle of Africa is called the "Ape of Heaven" by the Abyssinians, because its flight can be immediately distinguished from that of any other bird in the country: at one moment darting off like a young unbridled colt, it now hangs suspended in the blue vault of heaven, without the quivering of a pinion, without motion, then rising rapidly in the air, till lost to sight, it soon returns with terrific velocity to the earth, amid a complicated acrobatic performance, tumbling hither and thither like a pigeon. Its motion can scarcely be called flight, being as it is a compound of swimming, dancing, playing, and posturing in the air. Among the homely inhabitants of the forest villages of Central Africa, among the brown hordes and nomad tribes of the "Land of Ham," this bird for many a long day has had a place in their sayings and songs; for such a singular creature could not otherwise than become a subject of rhymed tradition amongst a people whose very greeting is poetic, whose forms of speech are poetical, and whose parting good-bye is rarely otherwise uttered than in rhyme. The flight of the Bateleur Eagle attracted common attention to the bird, and legend was not long in finding out something peculiar in its manner of life. "The All-merciful

Dispenser of grace and plenty," so runs the tale, "blessed everything upon the earth, and gave special gifts to different creatures, which they should hold so long as they showed themselves worthy of the grace of Allah and rejoiced in his mercy. On the steppes of the desert thou canst behold a Falcon, the 'Sukhr el Hakihm,'* whom the Sublime and All-wise Being has endowed with great wisdom and knowledge. This is the physician to the birds of the air; he is acquainted with the diseases under which the creatures of the Creator labour, as also the plants and roots which cure them. Thou mayest see it bringing these in its claws from distant lands.† It is useless for thee to seek to know whither it comes, or when it is called upon to heal the sick. The efficacy of the treatment is unfailing; to take its potions is to secure life, while neglect of them is certain death; they are like the 'Hedjahb' (Amulet), on which is written a prayer of Mahomet's in the hand of God's ambassador ('The peace of the Great Dispenser of all peace be upon him!'), which awakens the light of faith within us. It is permitted, by the grace of God, that the poor sons of Adam should make use of this bird. Watch where the Eagle Doctor makes its nest; be sure, however, not to take or destroy the eggs; wait patiently until the feathers of the young bird are free from blood, and then go to the Eagle's abode and injure or wound one of the nestlings, you will immediately become aware of the fact that the father flies in the morning in the direction toward which you turn when at prayer; wait quietly till he returns with a root in his claws; frighten him as he approaches, when he will leave you the root. Pick it up without fear, for it comes from the Lord, in whose hand is peace, and it is free from enchantment: then go and heal thy sick patients; they will all recover. Thus is the will of the All-merciful."

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* "Doctor Eagle," Arabian name of the Bateleur.—*Brehm.*

† The Arab, doubtless, sees the snakes, which the bird carries off to its nest, or some other quiet place, and takes them for roots.—*Brehm.*

I consider it unnecessary to quote any further anecdotes on the subject of the poetry of flight. Those who have travelled much, and especially those who have visited the South, can speak from experience of the impression made on them by meeting with the birds of their native home on their annual trip to foreign lands. We greet them as old friends, companions of our childhood, messengers from home. They call forth in the breast, even of the most hardened, a feeling of longing, not unmingled, however, with envy, for they can do as they please, and return in a short time from whence they came, though the journey be so long. In a few days the godlike gift of flight carries them back to where they were born; we, however, with all our schemes, inventions, and exercise of our splendid powers of intellect, cannot attain to the gift they have received from nature, however much we may yearn after it.

It is not their powers of flight alone which seem, in our eyes, worthy of envy; for not a few birds are as much at home in the water as in the air. Whoever has watched the doings of the Dipper by the banks of a bubbling trout-stream, has, we feel sure, felt in his inmost heart a secret spice of envy: for the spectator must have noticed how the bonny bird loves to disport itself where the water foams and swirls, and the fall thunders over the boulders. In such a place the Dipper may be seen sitting for minutes together on a slippery mossy stone: suddenly it sees something, and in a second the bird is in the water; at first it only wades, but as the streamlet deepens the water rapidly reaches the bird's neck, its head, and then—what happens? why it quietly allows the stream to flow on over it, perfectly indifferent, for it can run as well under water as on shore; it can dash on the wing through the roughest fall, or dive in deep water; and when it returns to the light of day the drops, still hanging to its plumage, are thrown off in pearly showers. It is at home on the ground, perfectly at its ease in the water, as also in the air: these three elements are its own,—it is master of them all!

How happy are birds! The Gull accompanies the sailor from the safe haven far out on the broad ocean; and when its pinions are fatigued can rest at its ease on the glassy surface of the endless, terrible, and hungry deep, ever at war with man; it dips its wings in the foam, takes its rest on the swelling billows, which ever remain kindly and favourably disposed towards their fair burden.

Whoever has been to sea must remember with pleasure the Shearwater, scarcely the size of a pigeon, with its long pointed wings, accompanying the ship long after the Gulls had taken their departure. They appear suddenly like mocking sprites, hanging just before the bows of the vessel: one knows not whence they come; they shoot, quick as thought, over the waves, away, and vanish all of a sudden out of sight, and one knows not whither they are bound. They arise from out of the depths of the ocean, into whose bosom they dive again. Their motions may be looked upon as a sport with air and water, with daylight and darkness: joyously they alike vanish and return again. Another bird, closely allied to them, plays a conspicuous part in sailors' yarns and sea-tales, foretelling good or evil fortune according as they appear: the sailor looks upon them as sacred beings. The manner in which they show themselves is the origin of the seamen's legend. They are rarely seen in calm weather; but when, however, the storm-driven ship is tossed like a ball from billow to billow, they immediately appear, and follow in the track of the labouring craft. It is marvellous how they show themselves: they run on the surface of the waves; the motion of the small—though for the bird's size, mighty—wings is scarcely perceptible, so seldom are they moved; it would seem as though they merely spread them out so as to preserve their equilibrium: thus they glide hither and thither over the waves, always at the same height from the surface, rising and falling in unison with them. These birds, the Stormy Petrels, are the true children of the tempest: they are known in every sea; every sailor has seen them, and has some yarn to tell in connection with them. To this day, even, the superstition of olden times has not been entirely lost sight of, and ordinary passengers are looked upon with angry glances by the crew if they seek to shoot one of these little creatures. There is such a charm in their movements, so much poetry, that the hard, rough sailor even is struck by it. "They are the souls of those buried at sea," is his legend: and indeed they look like spirits to everyone else, so ghostlike are their movements across the surge.

One might relate something similar about almost every water bird there is, and especially of those which inhabit the sea. Each one has, more or less, its own singular mode or manner, its own special motion. The Penguin, banished to the rocky islets of the pole; that ocean rover, the Frigate-bird and the Razorbill, the Guillemot, the Eider Duck, and the Cormorant, one and all engross our attention.

Richly endowed as the bird is with its various gifts, there is none which wins the love and friendship of man—his whole heart—more than does the power of song. The singing bird plays at the same time the part of poet; for, in our imagination we attach words to tune. The song of the bird stands higher than all other music, because it is adapted to the passing humour, accords with every feeling, and, like a perfect musical composition, awakens varied sentiments. A spring evening in the woods weaves bright, lovely dreams around the human heart: this is, however, entirely due to the birds, who enliven the scene with their living song. "The dusky greenwood," says Rossmässler, "would only seem sad and dreary, were it not for the voices of the birds. The weird primæval forest, without the chorus of a thousand feather-throats, would be but the silent garden of a magician." The fir forest is no less beautiful in winter than in summer; for when the weather is bitter cold it dons its holiday dress. The white coverlet, which in winter extends over field and meadow, looks in some measure barren and formal; whereas in the pine forest it produces a wonderful variation in colour and form: the boughs bend picturesquely under their burden of snow, each one gaining thereby in individuality of expression; some are fringed with long, delicate crystal icicles, while others, as well as the stems, are encased in a glittering armour of ice. Some of the rocks and boulders are quite free from snow, and show the summer green net-work of moss, with which they are covered. Outside, everything has blossomed, faded, and departed; while, in the forest, the mosses bloom, and the seeds of fir, larch, and spruce, are ripening. Thoroughly to estimate the beauty of the woodland in winter, one must assemble together, in the mind's eye, the following winter tints :—dark green, white, brown, red, and silver-gray—which make the picture so lovely. One must have seen for oneself the forest, when the sky has been without a single cloud, and the sun throws his brilliant rays upon this fairy palace,—these mighty pillared halls, their roofs festooned with diamonds and emeralds,—to be able to appreciate the beauty of the scene. The blaze of light, glitter, and sheen, cannot be surpassed by a summer forest scene! And yet the true life is wanting. Conscious that something is wanting, the eye wanders instinctively, seeking from tree-top to tree-top, until joyfully it catches sight of some lively little Titmouse, or the tiny, all-but silent Goldcrest, who still remain in the winter forest; and charmed, follows every movement of the Crossbill, which is breeding at this dead season of the year.

The true life in the forest awakens with the song of its first herald, namely, the tuneful Throstle, to which Welcker has given the name of "Forest Nightingale" in one of his most charming poems. The poet is right, too, to assign to this songster so high a rank, though all other woodland voices deserve their meed of praise. Not one of them can be spared from the forest; it would otherwise render the concert, which they give us in common, incomplete, for it seems to us as though each bird had its allotted "part." Song Thrush, Nightingale, Whitethroat, Blackcap, Redstart, Redbreast, Willow Wren, Wren, Goldcrest, Flycatcher, Chaffinch, Linnet, Greenfinch, Yellowhammer, Tree Pipit, Wood Lark, Tree-creeper, and Titmouse: these sing the old and yet ever new, long familiar though ever changing, melody,—

the Crow and Rook accompanying in their deepest bass; Black, Green and Pied Woodpeckers drum away in different tones, or laugh a cheery echo in concert; Goshawk, Buzzard, and Hobby Hawk, join in with their wild shrill cries; Jay and Shrike are the alto singers; the Nuthatch's call is like a single flute note; while the cooing of the Wood Quest forms an accompaniment to the whole. Not a single note ought to be wanting in this woodland concert; they must all be there; there is not one that mars, or one that is superfluous.

In the leafy wood the chorus is somewhat richer, and that is owing to the lovely song with which we are greeted by the Queen of Singers,—our Nightingale; and is, perhaps, still more striking than the concert in the pine forest. I need not dilate upon the subject of the song of the Nightingale, for everyone who has heard it takes it so much to heart that a verbal description cannot express its exquisite beauty. "The scent of the rose makes the soul sick, and the song of the Nightingale saddens the heart; but the rosy lip heals where the scent of the rose has wounded, and loving words atone for the sadness of the Nightingale's song," says an ancient Arabian poet, and with him more than a hundred others, who have sought to render the song of the Nightingale into poetry.

The song of birds rejoices, comforts, and raises the spirits of men of all places and at all times, even in countries where the fervid heat of the sun almost puts a stop to all singing; and also in winter, when some few songsters remain with us: above all, the bonny, cheery little Wren, who every now and again shakes the snowflakes from its brown jacket, and breaks out clear with its song in the winter air, as though challenging the rest of the world to be joyous and happy as itself in this rough season, and wait until it is over. Its cousin, the Dipper, resembling it in form and habits, sings brightly from its stand-place on a lump of ice. Bird song, to him who knows how to interpret it, is a poem full of life and freshness, truth and good advice; it is an incitement to pleasure, a home-greeting in foreign lands, and comfort in dark hours.

CHAPTER II.

BIRDS AND THEIR FRIENDS.

> " He prayeth well, who loveth well,
> Both man and bird and beast;
> He prayeth best, who loveth best,
> All things both great and small:
> For the dear God who loveth us,
> He made and loveth all."
>
> COLERIDGE.

THE world-known legend is told in every language under the sun; 'tis this:—There once was a time when birds and other animals lived together in peace with man; a time when they possessed a common language without the aid of poetry. Those halcyon days have long since passed away, and the secret bond of friendship has been broken!

And yet, happily, not quite! We are still visited by the Stork, who takes up its abode amongst us, as each spring comes round. Every year the Swallow returns from its, as yet, undiscovered winter refuge to its old house, which is placed among the rafters of a human habitation, and under man's protection. The Starling does not limit its association with man to the time when it returns from its journey, but is equally intimate during the winter's inhospitable reign. When the sun's rays gain strength, Wagtails and Redstarts appear; when the trees begin to bud, then come the Willow Wren and

Flycatcher; and when the hedges have donned their verdant coat, then the Whitethroat and Nightingale make their appearance. Sparrows, Buntings, Goldfinches, Titmice, Treecreepers, and Wrens, also cannot do without our company in the winter season.

I look upon it as an impossibility for any one, possessing a rightly-constituted mind, to regard birds with feelings of indifference; and if they are carefully watched, it is not difficult to recognize the good they do to man. We cannot avoid noticing the Stork, as he walks gravely up and down the fields and meadows, carefully examining every plant, and ever gathering something which is not part and parcel of the growth; we *must* see that the Starling is equally active in the garden, and but rarely breaks off a lettuce leaf; and we learn by experience that the fruit-trees which bear the most fruit are exactly those which Chaffinch, Whitethroat, Wryneck, Warbler, and Treecreeper, most love to frequent, and which receive their most assiduous attentions. If, based on the above observations, we feel any desire to extend the range of our enquiries, and make ourselves acquainted with the experiences of others, and to make a study of such matters, watching carefully the ways and doings of our feathered friends, we are sure to find that but *very* few birds are obnoxious to man's interests, and that an immense number are, on the contrary, of the greatest possible use to him; aye! and we shall soon become thoroughly convinced that the bird is a link, and a most important one, too, in the chain of creation; one, indeed, which we could but ill spare, for were there no small birds it is doubtful if we should be able to live. Such knowledge, in my opinion, cannot but suffice to affect the coldest and most apathetic mind, and will not fail to awaken feeling's eldest daughter—gratitude.

It is the *grateful* man who first thinks of fixing a wheel on the roof-ridge of his house for the Stork to build on; it is he who nails the boards for the Swallows, under those cornices of his house which are sheltered from the north; it is he who hangs up the Starling's box in the lime tree that overhangs the cottage, and who knocks together little boxes, and nails them up against the trees, for the benefit of other small birds breeding in holes, whose services are invaluable,—or enlarges the holes in decayed timber; it is the grateful man who plants a thick thorn-hedge in some quiet corner of the garden, where, when it has grown up, future generations of Warblers may hide their nests from view; it is he who spreads a table in winter for the granivorous birds. Hospitality brings its pleasures, but also its cares. The true host loves his guests, and shelters them from danger against every enemy, trick, or trap: like the stranger who takes shelter in the tent of the wandering Arab; or the Ibis, honoured of yore by the people and priesthood of Egypt; the trustful bird is safe against intrusion or attack. Woe betide the man who would insult or injure it; woe to his family and to his house. Accursed is he who would disturb a Swallow's nest. Such a one is a godless, unfeeling man in the eyes of the kind-hearted, and also a miserable being: this is the result of the curse. The Starling is not robbed of its young by a *soi-disant* friend for the sake of their being converted into a pudding; the nests of Titmice, Whitethroats, and Chaffinches, are carefully hunted for in the garden, not for the purpose of being taken, but, on the contrary, so as to be able to fence them in with a few strong thorns to defend them from the attacks of cats or polecats, who glide about at night seeking what they can pick up. The thievish Magpie meets with no mercy; Sparrowhawk and Falcon are regarded as deadly enemies by him who cares to preserve birds.*

Birds show their gratitude for the shelter afforded them, and the affection shown them, by unlimited confidence. They learn to know their protector, and to distinguish him from other people. Pigeons take food from his hand, instead of flying away at his approach, as formerly; the Whitethroat does not quit its nest, even, when, to obtain a peep of it, he separates the leaves and twigs which hide it from the public gaze; the Pied Flycatcher, occupying one of the little breeding-boxes, does not allow itself to be disturbed while sitting, even when its protector takes down the box from the tree, so as to lift up the lid and have a look at the pretty little creature; the Swallows feed their young in his presence without the slightest hesitation, and the nestlings peer out of the nest, looking so good, innocent and trustful, that it is a pleasure to behold them; the Stork greets the approach of his benefactor with a snapping noise of the beak.

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* I cannot too strongly or too often seek to impress upon my readers how necessary the preservation of birds is in our time, and how rich an interest they pay for money and pains expended on them. The want of holes in trees must be remedied not only in the garden, but in the woods; the little Warblers must be protected while nesting. If one enlarges a hole in a decayed tree so as to form on the outside a place of egress, and bores a few holes in the lower part, so as to let water run off, it will not be long before the house has a tenant, whose presence amply makes amends for all trouble taken. Natural holes are always better than artificial ones; still the latter will attract occupants. Holes may be made in stems and branches, which are rotten at the core, upon which one leaves the natural bark standing; they are then nailed to trees in the garden, with their entrances to the south or east, some being placed in a perpendicular, and some in a horizontal, position; or one may manufacture a number of tiny little boxes, out of old boards, measuring about 10 inches in length by 3 or 4 inches in height and breadth, and nail them up from 10 to 20 feet above the ground. All low, thorny growths are well suited for breeding hedges: blackthorn, whitethorn, gooseberry-bushes, wild rose, bramble; then fir-trees, cherry-trees, &c.: these ought to be planted, if possible, close together, and surrounded at first with a thick belt of quick-set. Living hedges of the same material are invaluable for fruit gardens, because they furnish a locality for your most hard-working gardeners. Trees containing Woodpeckers' holes ought, under all circumstances, to be looked upon as watch-towers or fortresses against the ever-ready array of destructive insects. Lastly, pursue all noxious birds with an unrelenting hand;—Eagles, Falcons, Goshawks, Sparrowhawks, Kites, Ravens, Magpies, and Shrikes: of these spare none!—*Brehm.*

The Arabs are hospitable, and have, indeed, been so from time immemorial. Cairo was founded because the Caliph's general, Abd-Allah-Omahr, would not allow his tent to be struck, on account of a Turtle Dove having built its nest in the roof of the same, and the young being unfledged, just when the General wished to advance! I have remarked, that in Arab houses Storks and Swallows are not the only birds which are looked upon by them with a favourable eye, but that all birds brought up amongst them show the utmost confidence in their protection. The Egyptian Vulture, which the sportsman finds so difficult of approach in Europe, patrols the towns and villages of Upper Egypt and Nubia without fear: I have seen one pick up a bone which we threw it, from before our tent-door, quite unconcerned. Eagles perch on the trees near the gates of the towns. The Kites (*Milvus parasiticus*), those confirmed beggars among birds, nest on the minarets and palms in the midst of the hamlets. The Kestrel and the Blackwinged Kite frequent the gardens, and do not offer to quit their nests, even when the gardener is picking fruit close by. The Little Owl, as does the Hoopoe, breeds in holes in the walls, about the height of a man from the ground. The Bee-eaters await their prey on the trees of the village, under which the children are playing. The Kingfishers of the Nile digest their meal on the well-wheels, regardless of the boys who are engaged in driving the oxen with loud cries and cracks of the whip; or dart down for fish, close to the women engaged in drawing water from the stream. The Hooded Crow breeds in the public walks of the towns. The Desert Lark runs under the hut of the Bedouin. Turtle Doves have also become next door to domestic animals; they build in low bushes, and do not fly from the nest at the approach of man. The Thick-knee Plover, usually so shy, runs about all day on the flat roofs of the houses in Cairo. The Stilt wades unconcernedly up and down in the village ponds, which have been made for the buffaloes to bathe in. The lovely Buff-backed Heron follows the herd of cattle, living with the herdsman on terms of friendship. The Night Herons roost on the sycamores in the centre of the village. One must be fond of, and well acquainted with "bird-life" to estimate all this.

Birds are perfectly aware that they can implicitly trust the Arab: no young scamp ever thinks of robbing their nest; no *sportsman* is lying in wait near their bower to kill the newly-fledged youngsters! In the eyes of the Arab, the naturalist, even, who only destroys an occasional pair of birds, or takes an egg or two for the purposes of science, is not held to be excused. They have often called down the curse of heaven upon my head for so doing; and, indeed, my brown servants used to tremble for me, fancying, as they said, that the curse was bound to take effect. I never abused them in return, for I could but admire the feelings which inspired them on these occasions: sentiments so noble and so deeply founded, that I have almost dreaded the curse, despite of myself.

In former days it may possibly have been thus in all countries; hence the legend before alluded to. In those days all birds were loved and cherished by man, some being, indeed, regarded by him as sacred. He saw connected with their appearance and departure those various phenomena of nature which took place the year round, and whose changes, &c., they did not then understand; he regarded the arrival of the migratory visitors with holy awe, as though the Deity himself had appeared.

In this manner the Egyptians held the Ibis to be sacred. When the Nile, after being at its lowest ebb rose again, and the water assumed a red tinge, then the Ibis appeared in the land of the Pharaohs, a sure guarantee that the stream—the Giver and Preserver of Life, which the people in their profound reverence raised to the rank of a god—would once again empty the well-spring of plenty over the thirsty land. The servant and messenger of this All-bounteous Deity commanded of necessity a reverence of a poetic and distinguished character, by reason of its importance: he, too, must also be a god! How beautiful, intelligent, and simple, was this messenger! The Ibis is one of the most amiable and winning birds I have ever met with; it associates of its own accord so much with man, that the trouble of taming the bird is but slight, and takes place almost without any advances on the part of the former. This the ancient Egyptians were fully aware of; for we find that they read the great book of Nature with intelligence and care: and it is owing to this that they deified the bird. On this account the bird's remains were preserved by their priests from decay, and kept for thousands of years, until the spirit, suffered by permission of an All-wise God to wander in space, should return to its earthly tenement. Like the human body, that of the bird was embalmed in the same spices in which the mortal remains of kings had been preserved from the ravages of time; and, like them, over the sarcophagus, a heap of stones was raised as a monument to the bird: one of the pyramids, called Sakahra, is dedicated to the Ibis.

Now, the Ibis is no longer venerated; the sacred bird has sunk to the rank of an ordinary mortal. Isis and Osiris have been supplanted by the crescent and the cross; and with the ancient gods vanished Thot, their celestial messenger. He, now, no longer appears in Egypt to announce to the people the rising of the sacred waters; they believe no longer in his mission. He has retired far up the mighty stream, "who hides his source," as though he felt called upon to watch the veil, behind which the origin of the ancient god lies hidden to this day. He lives, however, a thousand times over, in the splendid remains of a mighty past. His form stands out clearly amongst the hieroglyphics of the sacred writings; and thousands of years hence the porphyry will bear his image, so long confided to its care.

What we learn abroad is equally presented to our notice at home also. Our ancestors held certain birds to be sacred; it is so even to this day. No nation has thrown aside the charming fables, which the poetic spirit of a former age has handed down to us. We, indeed, have our sacred birds. Only ask the peasant what the Stork, who builds its nest on his house-roof, is to him? I know what his reply would be; he would say, "the Stork is my good, kind friend, who established himself here like one blessed of the Lord, a much-loved *protégé*, and a much-respected defender;" for he looks upon the Stork's nest as a protection from fire.

The Swallow is regarded, by almost all nations of the earth, with scarcely less interest than the Stork. The German looks upon this bird as a bird of blessing, because it will never take up its abode under a godless roof; it is also, in his eyes, the type of peace:—

"Come summer visitant, attach
To my reed-roof your nest of clay,
And let my ear your music catch
Low twittering underneath the thatch
At the gray dawn of day.

As fables tell, an Indian sage
The Hindustani woods among,
Could in his desert hermitage,
As if 'twere mark'd in written page,
Translate the wild bird's song.

I wish I did his power possess
That I might learn fleet bird, from thee,
What our vain systems only guess,
And know from what wild wilderness
You came across the sea."

The Arabs call it the "Bird of Paradise:" to it alone the gates of Eden—which the avenging angel, on account of the sins of man, had closed against the remaining animals, and guarded with a flaming sword—are open. The Spanish proverb says: "He who kills a Swallow murders his own mother." The savage of North America who, like the Bedouin, builds his hut of boughs—here to-day and there to-morrow,—also hangs up an empty gourd-shell on one of the neighbouring trees to serve as a nesting-place for the Swallow who may visit him; and it is only the Italian who—well, never mind, we will refer to this later: why disturb a bright and pleasant picture by introducing what is harsh and disagreeable? These birds, to whose name I gladly attach the qualification "holy," entered in unto man to dwell with him; doubtless they were the first to awaken in him feelings of hospitality and good will, which, however, brought with them not only pleasures, but penalties as well. The more golden the leaves of the trees turn, the smaller becomes the number of his favourite guests. We lose simultaneously the Nightingale and its song. The Swans have gone southward; the wood is bare; the nest under the eaves is abandoned. The Redstart and its brood have taken their departure amid many bobs and bows, which the host doubtless accepts as thanks; the Stork sets up a miserable snapping of the bill on the top of the house; and the bonny Starling, with all its jollity, begins to feel a sense of heaviness, which it cannot disguise, till at last, even *it* leaves its hospitable friend: they have all departed, far, far away to the southward, followed by man's sad glance, for his gay guests have taken his heart with them. Time speeds slowly, and many a rough day is passed over before they return again; and when they do come back, the host already begins to think, amid his joy, of the pain of parting again.

Thus, to prevent this pain, and to oppose the immutable, it doubtless occurred to man to set hidden nooses, or the well-baited net and treacherous snare, in the way of the birds of passage, and to encage the poor deceived creatures. He wished to attach the truants to himself, and nothing more; he did not know that their closer acquaintance would bring new pleasures; he did not think of the service they would be to him, but merely wished to practise hospitality. It is thus that I paint to myself how man first began to tame birds: my idea may possibly be erroneous; but what of that?—the picture pleases me. I think hospitality has somewhat to do with the taming of birds; and that it is nobler to look upon our cage birds rather as our guests than as our prisoners.

CHAPTER III.

THE CAGE BIRD AND THE BIRD-FANCIER.

> "There the treasured singing pet
> In his narrow cage is set,
> Welcoming the beams that come
> Upon his gilded prison-home."
>
> ELIZA COOK.

WHEN, for the first time, I visited Ruhla, in Thuringia, a locality much frequented and of no small renown, I was careful to look at the windows on either side of me in search of the pretty girls, and bird-cages with their feathered tenants, for which the place is celebrated. I saw many of both, though I was assured that in former times matters were very different, for in the good old days of yore cage birds and pretty maidens were far more plentiful. I, however, was very well satisfied with things as I found them: my greetings, as well as those of two other jovial sons of the learned city of Jena, met with the most gracious response from the lasses,—the more pleasant, too, because accompanied in every case by the buoyant melody of some feathered songster. At the same time I found I was perfectly right in having always looked upon the Ruhlaer, or "Rühler," as a peculiar race, for this reason,—the remarkable manner in which the spirit of poesy descends from father to son. That it is not beneath a poet to keep cage birds, tame them, bring their spirits into subjection to his own and appropriate them, no one, who has himself kept feathered pets, can well deny; and certainly a Ruhlaer does not doubt it for a moment! He experiences the deepest pleasure which the cage bird can afford its friend and protector, a pleasure which reaches his inmost soul. His only object in keeping his little friend in confinement is to become thoroughly and intimately acquainted with it.

The newly-caught bird is either timid, terrified, intractable, fierce, or sad, when first caged or confined in a room,—each one according to its natural temperament. The bird of prey, at man's approach, places itself in a posture of defence, lying on its back, and presenting its claws to the enemy, and beating its wings to pieces against the bars of the cage. The Warbler flutters anxiously hither and thither, without peace or rest, fleeing man's presence as though he was its worst enemy. The Lark dashes its head against the roof of the cage. The Woodpecker chips away the bars of its prison, and will even manage to peck through the leg of the table to which it may happen to be attached. Ravens, Crows, Herons, and Divers, strike at the face of their keeper. Pigeons dash, as though bereft of their senses, at any point where they can see light in their place of confinement. Partridges, Ducks, and Geese, are perfectly unmanageable,—invincible, in fact. One and all refuse food.

After a storm comes a calm, sadness succeeds to rage. The unhappy prisoner sits for hours, aye, days even, perfectly motionless at one spot; the instant, however, it is approached, all its former terror returns, and the experienced bird-catcher only does so, when absolutely necessary,—for instance, to give it fresh food; otherwise he never dreams of going near his charge, and takes care to cover the cage over with a dark cloth. The bird, in its now darkened prison, has time and opportunity to devote to the consideration of its position.

Loss of freedom is hard, very hard; but it is clear that it is useless to struggle with any idea of regaining it. The stomach impetuously asserts its rights; true, it is a very poetical idea to seek a release from all earthly woe by a death brought about by self-denial, terminating in starvation. The putting into execution, however, of such an enterprise is a very different matter,—one, indeed, far from easy, and demanding such unmitigated disgust of life as is rarely to be met with, where the heart is young and the pulse beats strong; the difficulty is, moreover, greatly increased when plenty of food is placed under one's nose, which, by the way, may be very savory;—in fact, which might just be tasted if only to see what it is like: the horrid human being is absent, and the room is quiet, and the bird gently raises its sad little head, smooths its feathers, takes one tiny mouthful,—a second, a third,—when, lo, it feeds! The master stands watching hidden somewhere handy, and rejoices like a child over the first favourable sign. The rascally little Tomtit, who has been about a fortnight in the room, and who sits sharpening its beak on the edge of the stove, laughs jeeringly at the prisoner, who has taken such a long time to come to a decision as to whether it should live or die! It is true the Titmouse only knocked its head against the window twice, and, needing no further admonition, took good care not to approach the perfidious crystal wall too close again. On the first day it made itself at home in the room, as if it had been resident there for a month, and each crack, cranny, and crevice, were duly noted: it ate the first day of its captivity, picking up the grains of hemp-seed, and, holding them gracefully in its claws, fed at its leisure, caught the flies, and hunted every crevice;—laughing all the while, even when the cat entered the room. With all this, however, it will never become thoroughly tame; it will be always quarrelling with every other bird, and be the very first to take advantage of an open door.

We will, however, now return to our prisoner: it is a Warbler; and we all know what they are when robbed of freedom. It is true it may be said to live, though in its jail its song falls dead upon the ear. It is only now and again that a note is rung from it,—broken, sad; a wailing call for the absent darling; one trembling harp-like tone torn from its very bosom, even as the love-lorn minstrel, allowing his hand to wander aimless to his instrument, strikes a chord vibrating with an agony, which proclaims his loss—all is lost! It is a long while before the bird becomes patiently reconciled to its fate: dreaming at night, it often flutters round the cage. The sad winter days are reflected in the bird's demeanour; and yet, without being aware of it, the wounds are gradually closing, for time, the great comforter, is doing his work. The little captive at last becomes accustomed to confinement; friends, companions, partners, are, alas, all wanting; it hopes, however, to meet with them again! Its only companion is its gaoler, and to him the little heart is opened, and the gaoler is rendered happy by the bird's friendship. With friendship comes confidence,—slowly, but surely; beware lest you check it,—it will be a long time returning, and possibly will never do so. The captor, however, is sure to do all he can to preserve it: quietly and carefully he approaches the cage, speaks low, avoids any sudden movement; in short, softness and gentleness win the day. After a time, the prisoner is no longer startled by the coming of its keeper; is no longer scared by his presence; takes the worm he throws it before his very eyes, and at last from his fingers, as a child takes bread from its mother's hand.

The days lengthen: the sun rises higher in the heavens; his rays become more fervent, and play cheerfully in at the window. Through the agency of the bright orb, song is once more awakened in the breast of the captive: it seems as if the prisoner had passed into a new existence. The sun cheers the isolated being more than anything else can do: the bird has forgotten its old life, and lives henceforth for song and its protector. Henceforth the captive is content.

It is different if the bird loses its freedom in the spring,—in the courting days. It is then usually not long before it begins to sing, though the song, as we may well imagine, seems only to speak of a lost love! And when we separate the male from the faithful female, the whole year often passes over before its troubles are forgotten and it sings again. The business of taming takes a long time, and costs a great deal of trouble. The fancier, however, seeks the affection of his *protégé:* he is determined to win it, because its songs render bright hours happier and sad ones lighter.

Most people are utterly mistaken in their ideas respecting the relations existing between the "fancier" and his birds. It is not unusual to give vent to superabundant expressions of feeling on this score. Without the slightest reflection people say: "Oh! poor wretched creature, cooped up in a cage! How can anyone be so cruel as to keep tame birds? Why are they not suffered to go free? Why is not the catching and keeping of birds in captivity made punishable by law," &c., *ad infinitum.*

It is true that, in times gone by, many people were cruel enough to blind their song birds; and it is equally true that the birds sought, later, to dispel the never-ending darkness by the inspired light of song exerted to its utmost: the assertion, however, that a bird ever sings a song indicative of pain is utterly incorrect; the song is, on the contrary, the most infallible sign of good health. When sick, hungry, or sad, a bird never sings! Far be it from me in any way to excuse the horrible and *utterly useless cruelty* of depriving the poor animal of sight; but, at the same time, I must positively deny the assertion made by some, that a bird accustomed to captivity ever feels, when singing, in any way depressed by its detention. The song bird is perfectly happy even in its cage: it is no opera singer, but gives utterance, in liquid melody, to the most genuine feeling of happiness, to the sad or joyous alike, giving comfort to the one and pleasure to the other. Would that one could as easily deny the charge of cruelty where domestic birds are concerned (who are infamously treated for epicurean reasons), as in the case of cage birds, and then there would be little cause to speak of brutality. I do not know a solitary reason *against* keeping cage birds, but rather a hundred *in favour* of the custom.

People make no outcry against the "Titmouse trap,"* by which so many thousands of useful birds perish; they do not object to the catching of Larks, and such other worthy institutions which tend to the pampering of epicurean palates; but woe betide the unfortunate lovers of cage birds who would depopulate the woods by catching, perchance, here a Nightingale, there a Chaffinch, Thrush, or other song bird, and place it in a cage! The result of such clamour is, that the snaring of a songster, particularly a Nightingale, and keeping it in confinement, is punishable by a heavy fine. In some places Nightingales are taxed to the extent of five thalers and upwards per annum. How does such a law work? Why, solely to the disadvantage of the poor, of course; for the rich can pay the fine with ease, while the five thalers deprive the poor man of his bird. I should consider the law a better one, did it punish the destruction of a nest, or the killing of any useful bird, by a fine of ten or twenty thalers, and forbid the catching and disturbing of song birds in public walks, gardens, and parks, while their capture for the cage, in the well-stocked wood and forest, should be left free. I consider it would be more humane if the poor man were allowed to keep his caged pet in peace, did he but catch it in a district where the loss would not be felt, and where it could be easily replaced.

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* It is the custom in Germany to catch numbers of these useful little creatures and sell them for food.—*W. J.*

I hold it to be cruel indeed that the mechanic, confined as he necessarily is to his room during the livelong day, in town or country, should be deprived of his cage bird,—he, poor fellow, whose brightest music, except the Swallow, is the harsh note of the Rook and Jackdaw, the shrill squeal of the Swift, or the squabbling of the House Sparrow on the roof; it is hard to deprive the weaver of his friend and companion, who lightens the long weary hours at the loom; the turner at his lathe; the carpenter at the bench;—to take away the bonny bird, who whistles its cheery lay to the cobbler bending over his last. These men have no opportunity of hearing other than caged songsters; their trades keep them shut up, and it is unkind and narrow-minded indeed to rob them of their only solace; while outside, the sunbeams smile, the flowers bloom, and birds are singing. The rich can go out when all Nature is gay. The heavy tax must needs cost the poor workman his bread, if he would preserve his pet; and yet the bird's very song calls forth a cheery strain from the toiler's inmost heart, which lightens the monotony of his labour.

What can the "cribbed, cabined and confined" mechanic, who possesses taste and feeling for song and sound, have, other than his caged pet? It is his comfort, solace, his all,—helps him to work; and you deny him *one* Nightingale if he wishes it! Thus, I say, this wish should be accorded,—leave him his pet!

I will not advance the oft-repeated, but preposterous, idea, that the poor or uneducated cannot estimate the value of the Nightingale's song, and that, in their eyes, one song bird is much about as good as another. It is impossible for the lover of cage birds to give expression to such an absurdity! His memory and his sense of feeling will serve him better; he remembers the brightening glance of the poor weaver, as his Nightingale struck up its lovely lay; he remembers the trouble and misery of the wood-cutter, when called upon to pay the tax of five thalers,—a sum the poor man could not lay his hands on; he knows that he will work at night for a fortnight rather than lose his friend;—he cannot part from his Nighingale! The bird-fancier is well acquainted with the mountain-villages where work and poverty go hand in hand, and where in every cottage, aye, the smallest hovel, a tame bird is to be seen. And why?

Because the inhabitants of these hovels feel that all would be desolate were it not for their songsters. He knows that in his feathered friend he possesses a domestic companion endowed with a faithful and cheerful disposition,—one worthy of his affection. It is on this account that these poor people should be left in undisturbed possession of their cage bird, even though it be a Nightingale! We all know that the male is always the songster, and that they are more numerous than the female birds; we must be aware that all the laws in the universe will not transplant the Nightingale, or any other song bird, to a locality it does not visit of its own free will. It is well, indeed, that there should be laws for the defence and protection of all small birds; but still the lover of cage birds should be left in peace.

These bright creatures afford their masters other pleasures than those which their song provides. "I most unhesitatingly assert," says my father, in his work on 'Cage Birds,' "that birds become ennobled by taming: see how they learn to distinguish their master, and to love him; they greet him when he rises early, or on his return after a long or even short absence from home; they seek in every possible manner to evince towards him their tenderness and gratitude. Those birds which are capable of having their intelligence cultivated to a high pitch, attain perfection through their contact with man: they become tender, grateful, and communicative; they acquaint their protector with their joys and sorrows. Is it no pleasure to be surrounded by such affectionate and loveable creatures? This pleasure can only be appreciated when experienced."

I will add, still further, that all birds kept in captivity soon get used to their master, and learn to look upon him as their protector and guardian, until in the end they cannot do without him; many birds will neither eat nor sing in his absence, and give unmistakable signs of satisfaction while doing either in his presence. When the master approaches the cage they come towards him; if he calls, they answer; if he bows to them, they return the compliment; they will not leave the open cage when a greater range of freedom is offered them, or if they do, they return to the cage as soon as their master drives them towards it; they let him know if one of the company has been guilty of any misdemeanour; they will sing to him those airs which he particularly likes, especially such as they have been taught; in short, they minister to his pleasure a hundred times a day! And these creatures are supposed to lead a sad, miserable existence,—to mourn their lot! Is this, a taste which affords so many pleasures, to be classed among the illicit and the inhuman? No; heaven forbid! People may cry out as they like against keeping cage birds, but I shall ever defend the practice. My tame birds have cheered and lightened many a weary hour, which otherwise would have been bitter and sad, indeed; and I trust they will yet afford me much future pleasure.

There was a period in my life when I was left alone,—forsaken, poor, sick, and sad: I was overwhelmed with misfortune, and the wounds I had received were still unhealed. The few men to whom I might have attached myself I was forced to flee like a pestilence: it was only at a much later date that I made a friend. In these sad times my feathered pets were my only comforters,—my friends,—amongst them I passed my happiest hours. They knew how I loved them; and on this account they did everything they could think of to make me love them the more. When I came into the courtyard, the whole troop would advance to welcome me: the Adjutant would snap its beak; the Bustard follow at my heels, uttering the while a soft, beautiful note; the Crane would beg for food; the Ibises collect round my chair. These last flew in and out as they liked, coming into our courtyard at meal-times, as though they considered that the table was laid for them as well as ourselves, and lost no opportunity of proving that they were much-loved guests. Besides these I kept a number of others: an Eagle Owl, which I had brought up from the nest; a Rhinoceros Hornbill, who divided his affections between a monkey and myself, and amused me in a high degree; Parrots, Eagles, and Vultures. I was in want of the most common necessaries of life; I was destitute, and almost starving: when amongst my birds, however, I wanted for nothing. The people amid whom I lived did not understand my language, though my birds did! The scene of my troubles lay where the White and Blue Niles meet, at Kartoom, in the interior of Africa.

It is most certain that hospitality exercised towards birds, whether they be confined or at liberty, produces a rich harvest of pleasure. He who has afforded protection to the wild birds is sure to look forward to spring with increased pleasure; he who really troubles himself about cage birds soon learns their value in his own eyes. Many quiet hours spent in their company leave behind them reminiscences much more marked than those spent in the rush and turmoil of the world's pleasures.

The intellectual gain afforded by contact with tame birds is immeasurably greater than those which one can purchase with money or money's worth; and it is on this account that I believe that it was a feeling of friendship, and not love of gain, which first induced man to tame birds. The ancient Egyptians, for instance, never kept birds with a view to profit, but for friendship's sake, or out of reverence. With the Hebrews it was, possibly, different; since in their early history we read of birds being used in sacrifice.

And now let us look round, and see how it is in our own country. Well, there are a large number of fanciers who keep birds solely for their own good pleasure, and not for gain. The protectors of wild birds now increase from day to day; and the cry of "Protection to birds" is fast becoming that of the respectable portion of society. Matters do not look so very bad.

On the other side, the true friends of birds have still a good deal to say before domestic fowls, &c., are treated more humanely than they were formerly, or even are now. Geese are still plucked alive, or are suspended for weeks together and crammed with hard flour-balls; young Cockerels are mutilated and plagued in a hundred other different ways: and yet all this takes place in the most shameless and open manner.

Our sensitive friends have, hitherto, been quite silent on this point. We bird-fanciers are well aware it is true that the house-keeper is actuated by other motives than ourselves: methinks, however, that the aim may be reached without "ill-treating the poor birds."

CHAPTER IV.

SPORTSMEN AND BIRDS.

> "With slaughtering gun the unwearied fowler roves,
> When frosts have whitened all the naked groves;
> Where Doves in flocks the leafless tree o'ershade
> And lonely Woodcocks haunt the watery glade,
> He lifts the tube, and levels with his eye;
> Straight a short thunder breaks the frozen sky:
> Oft, as in airy rings they skim the heath,
> The clamorous Lapwings feel the leaden death:
> Oft, as the mounting Larks their notes prepare,
> They fall, and leave their little lives in air."
>
> Pope.

The sportsman is a great friend to birds, incredible as it may appear in the eyes of those who see in the first a ruthless murderer, and in the second a victim. The chase is, and ever has been, a noble occupation, and is as dear to the heart of a man as love-making is to the youth: it is a grand amusement, abounding in pleasure and excitement, rich in poetry, though a work of death! The love of it is inborn in man, as with the lion and the eagle; every man, no matter who he is, is fond of sport: the boy follows the shooter with pleasure. With what intense delight have I accompanied sportsmen, as a boy; and how I have enjoyed sport myself, later on, as a man. Happy memories rise before me, bringing in their wake many a picture of days gone by, painted in colours more or less distinct, one of which I will reproduce for the benefit of my readers.

It is spring,—happy spring! The Wood Queest cooes out its tale of love, and the Blackcock is "drumming" in the forest glade. My dear father has invited me to accompany him to his old friend, the forester, who has a hiding-hut knocked together near the "playing-place" of the black game. On we tramp, with merry hearts and light footsteps, over hill and dale, from one village to another, until we reach the forester's solitary abode. The evening is passed—too quickly perhaps—in relating tales and yarns of forest life, for we must early to rest. A few hours later our host stands fully accoutred at the foot of my couch to wake me. It is a splendidly clear morning, the stars are still shining brightly overhead, though the coming sun already announces his appearance, for the gray dawn is rising in the east. We walk with rapid steps towards the forest,—sleep and fatigue are alike forgotten, banished as they are by the fresh, cool air, the living breath of morning fills the lungs and imparts vigour to the limbs. At length we see the forest extended before us, silent and dark,—it still preserves the aspect of night; and yet its tenants have begun their thrilling poetry: the Nightingale awakens the still sleeping tenants of the wood; Rock Redstart and Redbreast, have, however, been awake some time, though we did not hear them; the Cuckoo now answers the call, showing that it has thrown off the drowsy god, and is joined by the Missel Thrush, who whets its beak and bursts out with merry roundelay; the Blackbird's rich tones render homage to the shimmering dawn, while the little Robin's soft ditty is heard amongst them all. The voices increase in number every minute: Hedge

Sparrows, Warblers, and Goldcrests, Chaffinch, Linnet, Greenfinch, and Bunting, take an eager part in the morning carol. Almost the last to wake is the Jay: first it sings a little, taking a note alternately from one bird and another to make up its composition; then all at once it seems to occur to it that the Buzzard is gifted as a vocalist, whereupon it imitates with the greatest exactitude the wild cry of that bird; and finally it remembers that it is gifted with a song of its own, and forthwith you hear the harsh notes echoing through the wood, arousing the few remaining sluggards to life and song.

In the meanwhile it is light in the east, and we have reached our destination. On the borders of a thicket of moderate height are placed the huts which we are to occupy as stalls, while the green forest-lawn represents the stage upon which our hero is to appear, he having during the last eight days regularly performed his amatory "*pas seul.*" The forester told me this as we crept into one of the huts; after which he ordered me not to speak or stir in my narrow hiding-place, as the expected *virtuoso* is quite averse to human spectators. He whispered, however, in my ear the whole life and history of the Blackcock.

Here he comes,—there's our performer! Scarcely has the bird alighted than it commences its splendid ballet: it bows down its head almost to the ground, ruffles all its feathers, presses the half-expanded wing in a downward direction, or lets it hang loosely pendant; the lyre-shaped tail is spread out to such an extent as to form a semicircle, showing the lower white tail-coverts; it begins to gobble, repeating the performance from three to five times in succession, followed by the "whetting" process; after which it springs once or oftener into the air, as high as the table from the ground. In the next figure it turns and twirls about as though waltzing, trips a pace or so in advance, still calling, and then waltzes again; the "play" being concluded by the singular "whetting," a sound, as we before said, resembling the sharpening of a scythe. During this performance the bird, crazy with love, is supposed by sportsmen to be both deaf and blind, and indeed they will often take no notice of a miss-fire. This scene is repeated again and again in all its details, the bird becoming each time more and more excited. It continues to posture in the most extraordinary manner, running hither and thither over the dancing-place, like one possessed, rubbing the throat- and wing-feathers against the ground; dancing and springing from the earth in sudden bounds, sometimes even backwards, striking out with the wings, stretching out the neck now close to the ground before it, now straight up in the air: in fact, the bird's movements would lead one to think it either mad or silly! The excessive exertion of both body and voice excite it to that degree, that at last every movement is made with the greatest violence, and each note is uttered with such unparalleled force and power,—one may say, thrown out,—and in such rapid succession, that the gobbling at last resembles scornful laughter!

Repressing with difficulty every sound and movement, I eagerly watched this crazy pantomime. "Ah, my boy! you ought only to see," whispered the forester, "what a caper they cut when two Blackcocks, impelled by jealousy, appear at the same playing-ground! Each bird has its own particular stage, and will defend the same with all its strength against every intruder. Each evening the bird goes through some of its performance; after which it perches, towards sun-down, on the top of a very high tree. Just let a second Blackcock present itself below the next morning, with any idea of dancing in its company! In a second matters take an offensive form, and an engagement takes place, which often lasts for several days, when the weakest finds itself obliged to decamp and seek another playing-ground. It is true these encounters do not terminate fatally, the general damage being limited to the loss of a few feathers, both retiring without apparently any further inconvenience: it is not, however, the will that is wanting on the part of the combatants to make the meeting assume a deadlier form, but the want of sharp, offensive weapons. It is no question of defensive tactics, for both birds simply seize hold of one another. Springing at one another, they scratch with all their might, and, pecking at each other's heads, gobble as if for a wager; besides which, they dance, jump and scream like lunatics: it would seem as though the very hell of jealousy was gifted with a thousand tongues! If one has the luck to seize the other by the neck, the other returns the compliment, and sticking to one another like bull-dogs, they spring in the air, and shove and pull one another about to their heart's content. As soon as they loose their hold they both retreat backwards, so as to prepare for a fresh rush, remain for an instant with pendant wings, and tail erect; bent low to the ground, they bow a mutual challenge, and then fly at one another as before. The battle lasts until one is fairly seized by the head, and 'shown off the place,' in the true sense of the word, for the vanquished bird is driven over the boundary of its adversaries' beat, and retires in confusion for the time at least."

It is true I heard scarcely the half of this description, for the Blackcock kept approaching nearer and nearer; and when the bird was close enough I was to have a shot at it! The gun shook in my hand, I was so overcome with excitement. A hundred feelings seized me at once: now hope, then the contrary; now the fear that the bird would leave the place unscathed, or intense joy at its nearer approach. My old friend had become perfectly silent, though the brightening eye showed full well that he partook of the sportsman's excitement, while at the same time he made signs for me to pull myself together. At last the quarry is near enough: "Now," nods the forester, "make sure of him!" The shot echoes through the wood—the Blackcock has stopped "playing," and only gives a few convulsive movements of the wing in his last agony;—all is over. I rush wildly from the hut to secure my prize, as though I feared the dead bird might yet escape me. Long before the smoke has cleared off from the grass, I am in ambush again. In the meantime the forester has reloaded my gun, and begs me again to keep quiet, because a second bird might seek the "playing-ground;" and he was right; for before long another Blackcock made its appearance on the "playing-ground," having probably been disturbed elsewhere; this one is too cautious however, and manages to keep out of shot.

"He is an old hand," says the forester, "and they are cunning,"—recognizing the deceptive hut. "Look! look! There comes the Grayhen from out the thicket: she is not afraid of us." Tamely and without fear the pretty creature runs about before us, calling softly every now and then, "tak, tak, tak." "The Grayhen will do instead of the Blackcock!"—I wanted to shoot her as well; but before I had time to aim the forester snatched the gun from my hands, and read me a solemn lecture. A Grayhen is held inviolate! She reaches the shelter of the thicket unharmed. And, the Blackcock being disturbed by a passing woodcutter, our sport is brought to a close.

From that very day I have liked sportsmen; and the more I have seen of them the greater has been my liking, especially for those who are more sportsmen than mere shooters; for I am quite convinced that a true sportsman is fond of all animals, and is an especial friend to those he follows in the chase. The lair of the deer is his home; and he looks upon the different kinds of game as his children. I will, however, confine myself to birds: they are just as dear in his eyes as the stag, the roe, and the hare! He only shoots them at certain seasons,—never when breeding or moulting; he will not shoot a single bird where its loss might be felt. Of many species he does not destroy those pairs which take up their abode and breed on his preserves, but only shoots those which alight on their "passage." No true sportsman, for instance, would kill a Woodcock which sought to breed in his woods, but confines his attentions to those which pass through his domain during their migratory flight.

The shooting season commences as soon as the young Partridges are well able to fly, next comes the Pheasant, then the Hazel Hen in succession; after these the Quail, Snipe, Woodcock, and Duck arrive: the last are all strangers! If black game are very plentiful in a district, they may be thinned perhaps by a day's shooting; but nowhere, except in forests invaded by hungry peasants, is the rare and noble Capercaillie disturbed before the spring, and even then the chase is restricted to the male bird. The family peace is in no way disturbed by his loss, for he is a Mussulman,—like the Blackcock, or our domestic Turk, the common fowl, who one and all have their harems. Among birds of this family the father is, as a rule, not missed, one male having many mates; and to the latter alone all the troubles of nursery-life are left.

The time during which shooting is not permitted is called "fence-time;" like the word "preserve" it needs no explanation. During this period the gamekeeper's attention is given entirely to the protection of his charge, and at the same time it is a rueful season for all vermin hostile to game: Eagles, Goshawks, Sparrowhawks and Kites, the Hobby, Raven, Magpie, and the like, have good reason to call it a bad time.

The true sportsman, however, does not limit his protection to game, but extends it to every harmless animal in his preserves. In the neighbourhood of my home there lived a sportsman, in every sense of the word, in a lovely quiet valley, surrounded by woods: he never allowed a hollow stem or tree to serve as fire-wood, but looked upon it as a residence for either Titmice, Redstarts, Flycatchers, Nuthatches, Treecreepers, or Pied Woodpeckers, so that want of a habitation should not induce them to emigrate; in the same manner he manufactured artificial residences, hanging and fixing them in the trees, in the deepest recesses of the woods: the tiny lodgers are not long in finding out such desirable resting-places. He knows well the tall, ancient beeches which grow here and there on the estate, and is also well aware that they are no longer making wood, but are, on the contrary, deteriorating, and, as timber, would bring in but little to the forest fund; still he also knows that in these beeches dwell the Stock Dove, Green and Pied Woodpeckers; and even the very rare Great Black Woodpecker, the hero of many a fairy tale, takes up its abode there: these birds pay double and treble rent, and on this account he does not fell the monarchs of the forest. Owls and Buzzards need fear nothing at his hands, for he is fully aware of the extraordinary amount of good they do, and values them accordingly. Every useful bird is welcome in his preserves; but woe betide all thieves and footpads, in the form of vermin of any kind. The life to be seen on his property makes it a pleasure to stroll over it!

That the chase makes friends of man and birds is an undeniable fact. One might possibly make one exception to this rule in the case of vermin shooting,* which many imagine is only pursued for the sake of killing or shooting for practice. This sport, however, has its uses; inasmuch as the utter destruction of the robber-band affords protection to harmless birds. This sport is one of the noblest and pleasantest amusements incident to sporting life; for the shooter does not work exclusively for his own pleasure, but acts as the avenger and protector of the oppressed; and singularly enough he uses, as an assistant in the matter, the stupid king of the night, the Eagle Owl, who, more malignant than any of the Hawk tribe, pursues the thoughtless and merry band. It is true all this takes place greatly against its will, no doubt: such, however, is the fate of all sneaking, underhand creatures like itself; it is Nature's justice, and the retribution which, sooner or later, is sure to come at last.

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* Shooting at the "Krähenhütte" is a German mode of ridding the country of such vermin as Crows, Hawks, Jays, &c., and is accomplished by the shooter lying in ambush in a hut, with an Eagle Owl tied down within shot of him: the result is, that the different birds come down and around to bully the Owl, and thus fall easy victims to the sportsman.—*W. J.*

The sportsman makes good use of the enmity which exists between Falcons and Eagle Owls, and thus becomes the protector of the oppressed: this is nobly done and well managed, and on this account I am proud of our German sportsmen and their prowess.

Unfortunately it is not in other countries as with us; there exist, alas, other nations in Europe where what they call sport is nothing else than murder: the two worst of these are probably Italy and Spain,—there sport is not understood in its true and nobler sense. In those lands they do not shoot for the sake of obtaining food, but from love of killing: they will rob a lovely bird of life for the sake of less than a drachm of flesh! This is no sport,—it is cowardly assassination, murder without an object, because it is utterly useless; and the worst of all is that this wretched persecution has no fixed time or season, neither beginning nor end, but is carried on the whole year round; there is no limit to the destruction; nothing is spared; mercy is lost sight of: in short, the character of these nations is seen reflected in their childish sport.

At a future time I shall refer to the Italian, and his bird-catching. The so-called chase in Spain is carried on by means of the gun, and I will treat of it at once. The chase is free in Spain, but the hunter is not so! He still remains the slave of ignorance and barbarism; this is probably the reason why the Spaniard is cruel towards both man and beast. What can one expect of a people where the youth of the country are used to exhibitions of the most unparalleled brutality against the animal kingdom; where they are not only allowed, but are publicly conducted by their elders to see "*amusements*," which may be witnessed even now-a-days,—*amusements* where a noble animal in the last stage of decrepitude, old age and uselessness, is brought into a slaughter-house, called an "arena," to be there treated in the most barbarous and shameless manner, to be whipped and spurred by human beings, gored by a bull, and subjected to barbarities too sickening to mention. What, I ask, can be expected from such a specimen of the human race? One cannot look to him for pity towards the birds and beasts of the chase. Such a man is still a slave, scarcely freed from that curse of the human race,—dark, ignorant priestcraft, which is welded into his very soul: still the victim of ignorance, barbarity, and priestly tyranny, he remains a slave, and, slave-like, is ever cruel if he gets the upper hand.

At the bottom, the Spaniard's nature is great and noble, but he will never act in accordance with his better self before he becomes a free man. At the present moment he is not so, and therefore he bullies every living creature. His hunting, even, is a species of tormenting, which looks with contempt on any law or regulation of time or consideration. Thus it is that birds in Spain flee the presence of man, as though he were their greatest enemy. It cuts the lover of birds to the heart's core to see the Nightingale, in the midst of the season of song and love, appear amongst the many birds hanging up in the market for *food*,—to see tiny warblers shot down merely for the sake of killing them! We will, however, draw a veil over these miserable pictures, and congratulate ourselves rather on the sportsmen of our own land and their German chase!

CHAPTER V.

BIRD-CATCHING.

> "What are they, who thus, at early dawn,
> Where the rank thistle and the plantain grow,
> Set their fine nets, lime twigs, and little traps,
> Among a jocund choir of caged songsters?
> These are the bird-catchers."

Trapping and the chase are so closely related, in every respect, that what I have said with respect to the former will apply equally to the latter. Bird-catching is productive of the same pleasurable sensations,—love of the forest, the fresh morning air, and the joyous harmony of the feathered throng,—hope and expectation, loud rejoicing and silent delight; it is also the means of attaching men and birds to each other.

Those who have not personally experienced the pleasure of the golden morning hour spent in this sport, who have never set a springe, used the trammel, the quail-net, or wandered about with a trap-cage under the arm, can offer no opinion on the charms which attach themselves to bird-catching.

Moderation in all things is the true ground-work of every pleasure. Bird-catching, like the chase, is enticing, and has, doubtless, led some few astray: he, however, who bears this in mind and tempers his love of sport with humanity, may catch birds all his life without any evil result. He may set aside every objection usually advanced against this sport, for he will be sure not to adopt any branch of the amusement which may be attended with mischievous results. The clap-net, the trammel, the springe and the noose, have, as yet, never ruined a good disposition; by far rather has dame Nature, by means of the decoy-bird, taught and ennobled many a one, and has awakened in the hearts of many, love towards her and her children. The decoy-ground is beyond reproach, and on this account we will now pass an hour or two in the hut of the fowler, at least in imagination.

It is early morning; night still lingers silent and dark over the mountains, and the wind blows light, though chilly, on us at our departure, for autumn has already bedecked the grassy slopes with her thin shells of crystal, which glisten and shine in the darkness like pearls of dew in the light of dawn: this icy glitter, however, is cold,—and we shiver. The road is rough and steep, and we walk slowly, because we are forced to. The forest rises like a black wall before us, but opens out on our nearer approach. Here we are out of reach of the wind, which was cold, though it blew from the south-west and is favourable to our sport: we are warm and comfortable within our woodland palace.

With the first glint of the sun in the east a joyous song strikes on the ear: it is the bright clear lay of the Thrush. Birds singing in the autumn,—how is that? It is a caged decoy-bird belonging to a bird-catcher, for none other sing at this season of the year: to them the autumn must be as spring, for the poor creatures have been kept in the dark during the spring and summer; and now on being restored to light they are deceived, and carol blythely and bonnily to the opening dawn. They are the sirens of the bird-catcher: their song, like that of the fabled "Lorelei," leads to destruction. Through the medium of this song the brethren of the decoy-bird are lured to our hands; without him we should labour in vain; and to enable him to perform this duty properly it is necessary to stop the bird's song when it would naturally be strongest, and now we allow the stream of melody, hitherto arrested, to burst forth in all its beauty. This is hard, but yet not cruel, like the means adopted by that fowler and fancier who, deaf to all cries of compassion, deprives his song-birds and decoys of sight, *de facto*, by putting out their eyes, so that they may be kept ignorant of the season outside their prison,—whether spring, summer, autumn, or winter. These poor blind creatures sing almost the whole year round, as though imploring spring to come, and ever hoping that their night will at last turn to day—poor creatures! We, however, have nothing in common with such people or such brutality; we simply do what is necessary, and restore our songsters to spring as soon as it is in our power.

At last we have reached the fowler's hut: small as it is, it contains a vast amount of pleasure. In it the bird-catcher passes some of the happiest hours of his life, for he leaves his cares outside. The works of men—their quarrels, strifes, and bickerings—do not reach him here: in this hut the lover of birds lives his true self, because he lives naturally. This is a haunt to which one becomes daily more and more attached.

These tiny huts are comfortable in the extreme; you can make them perfectly habitable to your taste: you can arrange them so as to be able to take your coffee, smoke a pipe, and read and write,—like Andreas Naumann, the father of German Ornithology. It was in one of these that he wrote his 'Bird-catcher,' surrounded by the gnarled forest, as also by its spring music. The hoar frost lies on the ground, while inside it is warm and comfortable, quiet and solitary; outside we have the life and sounds of the forest ringing round us all fresh and bright; through the narrow cracks in the window-shutters we can watch the inner forest life right closely; one lives amongst one's pets without frightening them.

And when the wandering flocks halt on their journey, and descending, full of curiosity, perch on the twigs prepared among the bushes for their destruction, what hopes and fears, what counting of the prisoners, already captured in imagination, takes place within the narrow walls! The occupant of the hut is a very child in his happiness,—a king in his little domain, which, at that moment, he would not exchange for any other spot in the universe. There the hours pass like minutes: there is ever-changing occupation, fresh amusement. Even though the Thrush family, only, are the objects of pursuit, all other visitors to the coppice are equally interesting. Here, in the "soft shaded, melodious spot, where the bright red berries hang," every inhabitant of the forest is to be seen, from the Falcon to the Goldcrest. During the intervals between the captures there is so much to hear and see that the true bird-catcher must perforce become a close observer of Nature and her ways.

We must not be surprised to find that the practical fowler will often put to shame the educated theorist, as far as actual knowledge goes. The fowler's hut, and its accompaniments, is the school where the former has acquired his craft; it is there where he has so often listened and watched, until endowed with subtle eye and ear, so to speak, he learns to read the language of Nature, discover her secrets, and explain her mysteries. How is it that fowlers are always amiable people, favourites with everyone, and have a word to say to everybody, and that the right one, be it ever so homely? They learn this at the fowling-ground: it is there their characters are formed. The little hut in the greenwood has taught them and made them what they are.

The actual capture of birds is not the sole aim; it is only one of the motives which attach the bird-catcher to his sport. He has other things to do besides setting his nets,—to guard against birds of prey. Goshawk, Sparrowhawk, Kite, &c., frighten the decoy-birds in the bushes, especially those which are simply attached to a string and a peg on the ground, and they also prevent the approach of the wished-for visitors. Obnoxious individuals are greeted on their approach with a charge of shot, for the gun always stands loaded in a corner of the hut. If the impudent thief is killed, so much the better; it is a good action performed. Besides this there is much to observe! Many lovely visitors—the Wren, Redbreast, Hedge-sparrow, Whitethroat, Titmouse, and Goldcrest—glide in and out of the hedges which surround the fowling-place; and one is glad to see them: they are permitted to pick up an odd bit or two if they like, and pursue their journey unmolested. Then there is much to puzzle over and reflect on. Foreign guests appear, and the question immediately arises, "Where do they come from?" Is it really true that the Bohemian Waxwing, which we sometimes see, only comes once in seven years? Is it that the Crossbill knows for certain beforehand, whether the seeds of the pine are ripe and plentiful, that makes it appear at the proper season? Amusing companions often visit one,—such as the merry little squirrel, as it hops across.

Enough; we must return to our business. Another flock of Redwings has just passed through the wood: several have already alighted on the decoy-branch, and look greedily down on the fresh berries beneath; the others are perched on the tallest firs at the edge of the wood. Our little hut, covered with ivy, alarms them just as little as the green-coloured net; and yet the resting-place does seem to them quite safe:—a fresh, green spot in the middle of a wood, with branches of juniper scarcely touched, and covered with fruit, interspersed with clusters of berries of the mountain ash. This looks very suspicious, and demands careful investigation. "We shan't do any good with this lot," says the experienced fowler, who we have engaged to do the roughest of the work; "they have been at this game before now!" He was, however, mistaken this time, at all events. The Lapland strangers have abandoned their usual caution: everything is so quiet here in the wood,—one sees and hears nothing; the berries, too, are so tempting! "Who knows when we may get such a feed again! there are several of our companions hopping amongst the berries." Idiots, you are all lost! They only think of the feast in prospect: one, two, three, ten descend, one after another; the whole flock almost is on the fowling-floor, with the exception of one or two old hands who remain out of reach, and continue to warn the over-eager throng. The fowler gives the word,—one pull, and, quick as lightning, the too-trusting strangers are struggling in the toils of the net!

The next operation is extracting the prisoners from the net. This is an operation which is at the same time a pleasure, and yet a painful one; for the captured birds must be killed. This office is as disagreeable to the bird-catcher as the act of twisting the neck of an innocent young pigeon is to the housewife: both she and the fowler are as much justified as the hunter in the deadly work. The Redwings are to us what the Quails were to the Israelites in the desert: they come to us from the far-distant north, on their way to the south of Europe; not one of them ever remains with us for good and all. It is true that some of our home birds fall victims along with the strangers, which is unfortunate for our woods, for many a good songster is roasted in company with its northern cousin. Fortunately, however, I know several fowlers who let every Song Thrush they capture go free. Such people I call bird-catchers of the right sort,—their heart is in the right place.

As soon as the captured game is disposed of, the net is again set with all possible speed, and the sport begins afresh. Often the fowler has no peace or rest: this state of things, however, suits him well, for the season for his sport passes only too quickly. If the weather is favourable he remains every day till mid-day at his post, after which the nets and gear are taken up, and the decoy-birds are restored to their cages, and regaled with their well-earned meal; then they are all shut up in the hut, and he turns his steps homewards with a light heart and well-filled game-bag. The afternoon passes rather slowly; the evening in the valley is pleasant; for night is nearing, and then comes—morning, when off we start afresh for the fowler's hut!

The foregoing lines are written with a view to describe, in a rough sketch, the pleasures connected with bird-catching in the forest glade; these pleasures, as indeed all honest ones, are not easily painted in words. The sport of the fowling-floor, bat folding, the use of lime twigs, &c., I have defended most strenuously throughout. These amusements are harmless, and in no way connected with the disappearance of birds, as is erroneously advanced by some. We know the true cause, and smile at the cavilling and carping shown by so many people, who would fain deprive us of the pleasure of fowling, through an over-drawn and hypocritical assumption of tender-heartedness. We are well aware that *our* woods and forests cannot suffer by the entrapping of such *strangers* as Redwings, &c.

The sport of clap-netting is, to my fancy, quite as enjoyable, if not more so. It is resorted to for the capture of cage birds, for none but a gourmand of the first water, whose heart lies in the region of the stomach, could possibly have the heart to catch singing birds for the luxuries of the table. It is a most delightful amusement to watch the pretty, active little creatures, and follow them unseen from bush to bush, to listen, charmed, by their song, and then to set the traitorous net, so as to lead to a more intimate acquaintance between us. This sport serves the noblest ends, and forms an inward bond of friendship between men and birds; and I, for my part, think there is nothing in the world more pleasant than to make plenty of friends, and thus I heartily greet those who, like myself, understand how to surround themselves with songsters!

Besides the above there is a far more serious kind of bird-catching. In the far north, among the rocky breeding-places, which we have described in a former chapter, where millions upon millions of birds are yearly reared, this sport is pursued year after year. The inhabitants of these islands mark the breeding-places chosen by the sea-fowl, from which they take hundreds of thousands of eggs and young, without, however, apparently diminishing their numbers to any appreciable extent.

The trade of the rock-fowler is a terrible one,—a calling requiring manhood, agility, experience, presence of mind,—and with all this, good fortune,—such as scarcely any other occupation would demand. In this pursuit death stares the fowler in the face in a thousand different shapes; there is peril in every step. It is only those who have been used to look danger in the face from their youth up, and are accustomed to risk their lives for a trifle, who can become good rock-fowlers. In certain families the dread calling is inherited from father to son: these followers of the craft are looked up to by the other inhabitants, for in those islands the profession of fowler is regarded as an honourable employment, a high art, worthy of the best men. This celebrity and renown is, however, dearly bought, for, as in the family of the chamois hunter, it is but seldom that any male member dies in his bed; and one rarely meets with a rock-fowler who is a hale and sound old man. Death meets them suddenly in the middle of an active pursuit, or accident cripples them for life. Not a year passes which does not claim one or more victims from their guild, none that a cripple is not made in following this terrible trade. Before each excursion the pious fowler utters a silent prayer, and commits himself to the hands of his Maker,—as does the miner before descending into the mighty depths of the earth. Before every trip the fowler takes leave of his family, as though they were never to meet again. And yet, with all this, the son follows the same calling, aye, even were he to be eye-witness of his father's destruction,—by being dashed to the depths below!

This kind of bird-catching is no simple amusement, and yet it is productive of enjoyment, because every dangerous work pleases the heart of a genuine man. The fowler faces danger and death to obtain food for his family; he gathers store for the long, dreary winter in his break-neck expeditions. The sea is the arable land, which the inhabitants of these islands till; the sea is their garner, their treasure-house,—everything, in fact, to them; for the land is much too sterile and inhospitable to support them; and the long, hard winter in high latitudes imperatively obliges man to rely entirely on his own exertions, for it hinders any attempt at union, breaks the bonds of sociability, and makes neighbours out of the question. Shut up for months together in a hut, either wholly or partially buried under the snow, cut off from all communication with the outer world, the inhabitant of these islands is only possessed of that which he has been able to collect together as food for the winter: he is dependent on his stores; if they fail he must die! On this account they collect everything which the sea affords them, and which is eatable, at risk of life and limb.

The fowler harvests the products of the ocean in three different ways. When the rocky walls of the islands become populated with their summer guests, when every hole, crack or crevice, ledge, point and crag is tenanted by the feathered throng, then the fowler approaches the rocks, in a boat from below, accompanied by three or four companions, and effects a landing at the foot of the perpendicular precipice, where the effect of the rolling surges is least felt; or perhaps he climbs up from the side; while by the third mode he lets himself down by a rope over the rock from above. We have to thank the naturalist, Graba, for a description of this kind of fowling on the Færoe Islands, from which I have taken the following.

"Almost all the sea birds on these islands are used as food, the only exceptions being Gulls, Skuas, and Cormorants. All others, especially Guillemots, Razorbills, and Puffins, are eaten, both when fresh and when salted and dried. In May the inhabitants of many islands live exclusively on the eggs of sea-fowl: want alone can induce them to relish such food, or to procure it at so great a risk.

"When climbing the rocks from below the fowler uses a round pole, from ten to twelve feet in length, and an inch and a half thick, to the end of which a bent horn is attached; at either end of the horn are two holes, through which are run two bent sticks, four feet in length, which are connected by straps and thongs. To this machine a wide-meshed net is attached, with which the sitting bird is covered; so little do they fear man, that they are at any time entangled without difficulty. The captives are speedily put an end to; with one twist of the wrist their necks are wrung. After the lower ledges have been cleared of their occupants, the ascent of the rock commences. Two fowlers go together on this dangerous journey, while the others remain below in the boat, and collect the dead birds which are thrown down to them. The climbers are attached to one another by a rope, from twenty to sixty feet long, which they make fast round the body, and start armed with the pole-net. The first steps out of the boat on to the rock, the second assisting him by means of a small board, which is made fast to the other end of the pole, and which is used as the seat of the climber, until the latter has reached some ledge where he can find good foothold; from this place the first climber draws up his companion: thus they help one another in turn, until the desired spot has been reached. Here—if unused to man's presence—the fowlers simply seize the dumbfounded birds with the hand, without their making any effort to escape. Besides these many are caught in the net as they fly past, just as a boy would catch a butterfly. In the space of a few hours these two will throw down to their companions beneath some hundreds of dead birds. The descent is much more dangerous than the ascent, and is carried on the reverse way to the latter. During this part of the operation it not unseldom happens that the one who is climbing slips, or that the rock crumbles under him, so that both man and stones are launched into space. It is at this critical moment that the one above must keep his foothold, else both will be dashed to pieces on the rocks in the surf beneath. Climbing the precipice from the side is done in much the same fashion as the ascent from below; the method adopted when descending from the top is quite different.

"A three-inch rope, varying from six to twelve hundred feet in length, is made fast round the waist of the fowler, and by this rope he is lowered down into the abyss beneath: the rope is held by six men on the top, who take care that it does not chafe against the sharp edges of the rock; the fowler, seated in a webbing of broad thongs, attaches a thin line to his wrist, with which to signal to his comrades at the top, and then descends. An inexperienced person would spin round and round in the air during the operation like a whirligig, and would easily come to grief. The fowler, however, knows how to avoid this, and reaches in safety those ledges where he wishes to collect his booty. Safely landed, he unfastens the rope, and carefully lays the end under a stone until it is next wanted; he then sets to work with hands and net, and catches as many birds as he can, wrings their necks, and throws them into the sea, where the people in the boats pick them up: he then ties on the rope afresh, and makes another start. The fowler often comes to places where the upper portion of the rock overhangs, which would allow him to pass the nesting-place in his descent, were he not able, by a tremendous effort of strength, to reach the desired spot: thus he sets himself swinging, until the oscillations become long enough to swing him under the ledge on to the breeding-place; this he will do under great difficulties, getting over projections of this sort, and treading places which lie as much as fifty feet from the perpendicular line at which he was lowered. This mode of overcoming the apparently impossible, is, however, dangerous in the extreme: even the greatest care does not always prevent the rope breaking, or a piece of rock may fall from above and dash the unfortunate fowler to pieces; an unusual impetus in the swinging to and fro may smash him against the rocky wall;—in short, death threatens him at every step."

Such bird-catching as the above I look upon as a crime, not towards the birds, but towards man. Birds are outraged only by the fowler in those countries, who vies with idle boys in useless destruction of life. I know two kinds of fowling, which every right-thinking and reasonable man cannot look upon as otherwise than justifiable: these are the capture, *at the proper season*, of the larger birds for the table, and the smaller ones for the cage.

Every other kind of bird-catching I most unhesitatingly condemn; and for this very reason I consider the "Titmouse-hut," or Titmouse trapping, as altogether unworthy of the true sportsman, and rather as the slaughter-house, where cruel, barbarous, and senseless boys hold their orgies. The Titmice are *the most useful of our forest birds,* and are so small that the numbers necessary to make a dish must of necessity cause much useless destruction; thus every sensible person ought to aid in protecting them to the best of his power. The individual who takes pleasure in this wholesale destruction sins, not only against the defenceless birds, but against his fellow-man, for, in the pursuit of his amusement, he injures the forest, the common property of the people; he destroys those who labour diligently for our benefit, and whose services he cannot replace. To understand the value of my last words one must be aware of the amount of good effected by one solitary Titmouse, and from that calculate what their united services are worth, in order to comprehend the wanton mischief which is perpetrated at the "Titmouse hut."* He who destroys one Titmouse rears hundreds of thousands of insects, which effect immense damage to the wood; he who kills one of these little birds places himself on a perfect equality with the uneducated, ignorant Italian.

Heaven forbid that the legitimate bird-catcher should take the above as a pattern. He spares no living animal, not even the invaluable Swallow, which, by the way, is not at all times held sacred by the Spaniard, who hangs out lines armed with tiny hooks baited with feathers or live insects; the pretty creatures snap at them, and are thus caught. He will net a whole reed-bed at night, where these birds roost during their migration, treading hundreds in the mud underfoot, whence he extracts them the next day! He knows not the meaning of hospitality or love. As soon as the birds of passage arrive the "Roccolo" takes his stand on every hill, a net is placed in every bush: it is all one to him what he catches, whether the wanderer be great or small, useful or hurtful; death to all is the immutable sentence, from the Thrush or Redwing to the Goldcrest. "By the 'Langensee' Lake," says Tschudi, "there is an annual destruction of some *sixty thousand* warblers; at Bergamo, Verona, Chiavenna, and Brescia, they are captured by millions: most of these birds are little creatures which, in our part of the world, no one would dream of harming, and which would be the rather preserved, on account of their song." I do not call this fowling; it is a terrible, brutalising sin against Nature; and this system of murder is permitted, be it remembered, the whole year round: in the neighbourhood even of the nest the horsehair noose is set; thus young and old fall alike victims to the greediness of the Italian. No wonder, then, that the bird flees his home. One may wander for miles in the "land of song" and not meet with a single warbler!

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* Meisenhütte (German): a regular station for trapping Titmice in the woods. —*W. J.*

Italians, as well as those who think like them in other lands, who read these pages, may bear in mind that they are sinning against the civilization of our time, and that they hold themselves up to the opprobrium of all right-thinking men, if they pervert a delightful and noble sport, making a misuse of it to murder and destroy, but never using to protect.

CHAPTER VI.

THE NATURALIST AND THE BIRD.

"Books, 'tis a dull and endless strife,
Come hear the woodland Linnet;
How sweet his music—on my life
There's more of wisdom in it.
And hark how blithe the Throstle sings,
He, too, is no mean preacher;
Come forth into the light of things,
Let Nature be your teacher."
WORDSWORTH.

THE true naturalist, in heart and soul, is he who recognizes the bonds of friendship which exist between man and beast, and who acts up to them. It is he who prizes the feathered tribe; he to whom flight is not merely an unsolved riddle, but rather a lovely poem; he who becomes sportsman and bird-catcher, so as to render himself conversant with birds and their habits of life, while he is at the same time their host and protector; it is he who lives amongst birds, and associates as it were with them; he who looks upon them as the medium through which Nature shows her joy and happiness, because, through their songs, he feels the echo of the same within his own breast. Enquiry, and the thirst for knowledge, is the end and aim of that bond of friendship which keeps men and birds together. Like every other scientific pursuit, that of the naturalist has its joys and pains, the trouble and the reward; yet the pleasure far exceeds the pain, and the reward is so great that all difficulties to be met with in attaining it are overlooked.

It has, from time immemorial, ever been difficult to become a naturalist, and dangerous to be one; and to the present day these difficulties still remain. He who would serve his special branch of science aright, must become its willing slave—body and soul. The body must undergo fatigue and danger; the soul struggle against the poisonous influences of misunderstanding, contempt, hatred, and the accusation of heresy: thus, bodily and mental troubles and sorrows are not wanting in the pursuit of Natural History. She recognizes but one motto :—" To examine is holier than to believe." Armed with this talisman she disperses her knights errant to every quarter of the known globe, and to it we owe her many acquisitions. It is this motto which sends scientific men from Pole to Pole, from east to west; in the African desert or the glaciers of the Alps; to equatorial swamps and primæval forests, prolific of fever, whose very air breathes poison: it is this device which enables them cheerfully to brave every danger. It was in acting up to this motto that Pliny lost his life, and Galileo his bodily and spiritual freedom; this is the motto which scandalizes all those who would look upon the reverse as the highest aim of human wisdom. Like Vesuvius, who buried the ancient naturalist under her ashes, they seek to hurl the dying embers of their wrath at us in the form of proscriptions, &c., trying again to darken the earth under the ashes of their dogmas. In our days, fortunately, their influence is no longer capable of quenching the light of heaven; and in a short time hence, such dross will serve only to fructify the land where the naturalist has sown his seed, instead of withering its germ.

Natural Science binds its disciples with magic chains, and knows how to render them happy in her embrace, even though she dispenses her benefits with a sparing hand, and also deals out her scanty reward in small, but precious gifts. The father of our immortal Naumann was but a simple peasant; observation of Nature made him an enquirer, and enquiry led him to strive in the paths of science, showing a patience and devotion that can only be understood by him, who himself serves in the ranks of science. His own words will best pourtray him to the reader.

"By this time I had made myself acquainted with the birds of the forest and the field. I yet stood in need, however, of information on the subject of aquatic birds, which, as they were not all to be met with in our ponds, still remained unknown to me. I had a great yearning to become acquainted with them, and by unlooked-for good fortune the opportunity occurred.

"About half a mile (German) from us there was a dried-up marsh, which belonged to a very old friend of mine, who at that time gave me the exclusive right of shooting over it. Fortunately, that year the rainfall was very great, greater indeed than it had been, possibly for the last hundred years. As our neighbourhood lay somewhat low our best fields were spoiled, and became covered with coarse grass and sedge, owing to the floods putting an entire stop to all cultivation.

"Under these circumstances I had less farm-work to do than usual, and, therefore, had the more opportunity to prosecute my researches after water-fowl. The swamp I have just mentioned looked like a lake, and attracted numbers of different water-birds, of which many species were new to me. The pleasure of such a sight made me extremely anxious to become possessed of specimens of these various birds. As long as the migratory season lasted, I was almost daily to be found in the marsh. Though the rain poured in torrents, and my boots became leaky, and even rotted from off my feet, I looked on these things as trifles compared with the pleasure I experienced in becoming acquainted with these birds and their habits. This sort of life, however, finished by giving me ague: I cured myself, though, with a plant (*Teucrium Scordium*, L.), which I found in the swamp, and had a pair of fisherman's boots made, after which I returned to the charge, wading to the little hillocks which lay above water; on these I built sheds and screens of sedge and reeds, under which I passed the moonlight nights, waiting for any rare Duck or other aquatic bird. This lasted for three successive summers,—in the years 1770, 1771, and 1772."

Another naturalist earned his treasures of experience under almost insurmountable difficulties: I allude to Audubon. From his youth the pursuit of Nature and her ways seemed to be his especial pleasure. He was brought up as a merchant; and on the death of his father came into possession of his business and plantation in Pennsylvania. There he lived for several years in comfortable circumstances; but the inward yearning for enquiry into the things of Nature left him no rest at home. He had already studied and painted the feathered denizens of his native woods, and now sought to become acquainted with all the remaining birds of North America. He had finished with the greatest of care two hundred drawings, before he made arrangements for starting on his travels. Leaving his sketches in the care of one of his relations, he started for the boundless prairies, forests, and deserts of his native land, equipped as half painter, half sportsman. He pursued his journey courageously, under the greatest difficulties and dangers. Often he passed the night, exhausted with hunger and fatigue, under some monarch of the forest, aye, nearly driven to despair; and yet he steadfastly persevered! He returned to his home rich in experiences and sketches. His first question was for the chest containing his early drawings. Oh! what a terrible misfortune!—mice had taken up their abode in the chest, and had almost entirely devoured the valuable collection. "I passed several sleepless nights," he writes; "the days were spent in dreadful apathy: at length, strength of mind gained the victory. Afresh I shouldered my gun, and wandered out again into the forest, as bright and in as good spirits as though nothing had happened; and I even began to congratulate myself at the prospect of now being able to make a series of more perfect drawings. After three years' work I had again refilled my portfolio."

These two sketches will suffice to show the toils undergone by observing naturalists. I could name many others. Wilson, another North-American zoologist, was a weaver by trade, and only learned to draw when he was forty years of age, so as to enable him to introduce his much-loved birds before the public. He battled against poverty to the end of his life, working to the last with an energy and patience above all praise. Le Vaillant was for Africa the same as Wilson and Audubon were for America. And there are still many men like them, who have fought and striven for their favourite science.

Still more painful than the bodily and mental struggles we have to undergo, is the ruthless chastisement which we receive at the hands of dogmatists. When we meet with opinions, such as those expressed by the Jesuit Father Burgstaller, of Feldkirch, in regard to the great naturalist,—I may say, the greatest ever known,—Alexander von Humboldt, classing him amongst brutes, we can but smile at opinions so deficient in intelligence. It is otherwise, however, when we find our whole body at feud with the would-be religionists of our time, who, instead of supporting the naturalist in his earnest search after knowledge and truth, misconstrue the motive by which he is actuated,—the enlightenment of the ignorant,—and seek to persecute him under the mask of extra devotion to the Great God above. No small expenditure of strength and courage is required to stand firm amid the assaults to which we are subjected at the hands of the formalist. To believe without knowing is easy enough, and comfortable, too; but to acquire sufficient knowledge to enable one to believe is very difficult. The thirst for knowledge ever remains unslaked; and on this account our motto is one more of promise than of attestation. Every concession, however, be it ever so small, is, in our eyes, a reward for our endeavours: our strength lies in the conquest of difficulties. By this means we have been able to advance science, which alone, for us, is sufficient; each victory over ignorance is a fresh and happy acquisition in our eyes. The naturalist is, perhaps, the only being who can estimate their true value.

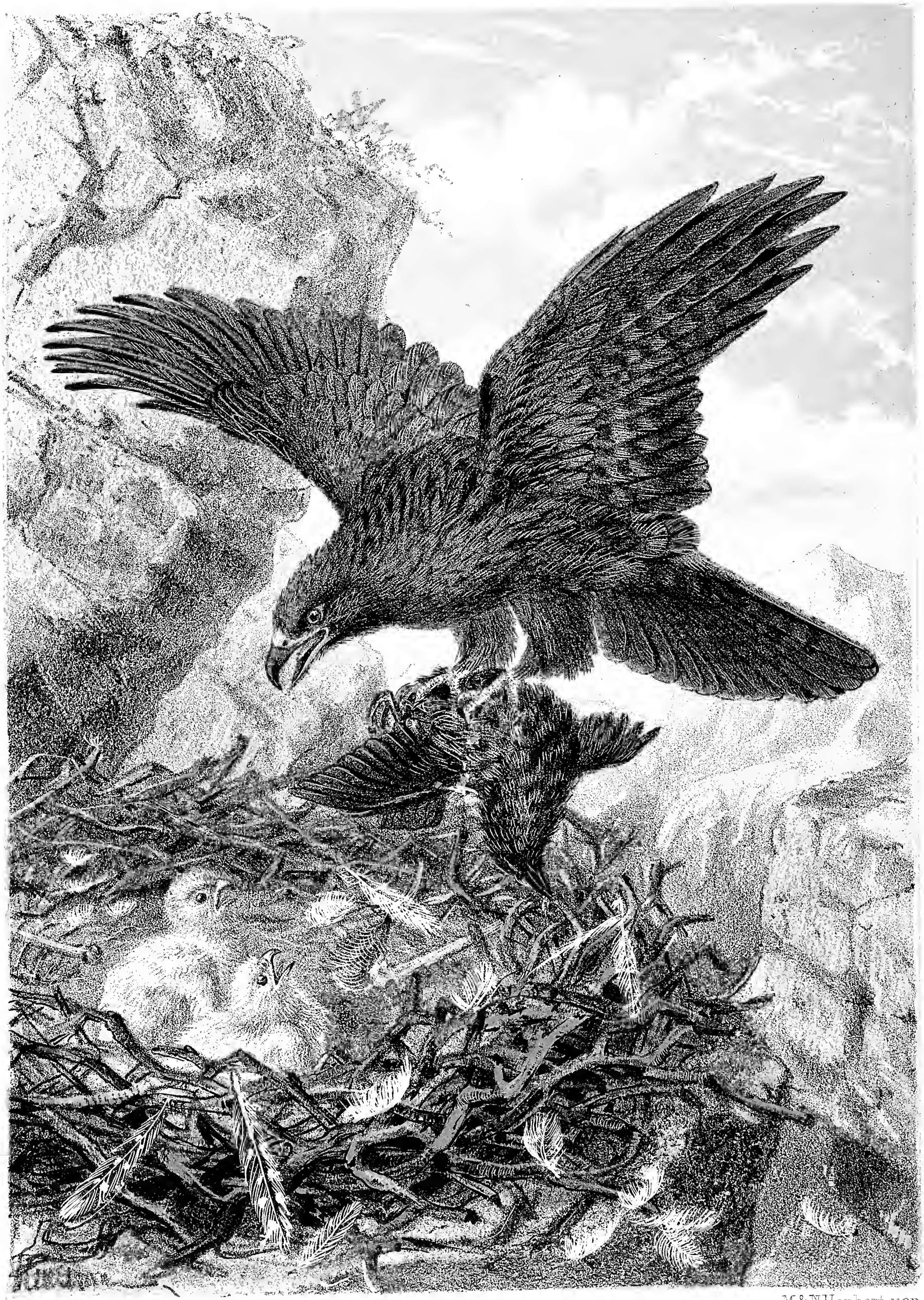
We strive for the highest, and are satisfied with the smallest, result; we risk life, and are satisfied with hearing the song of a bird, the reward which we have *earned!* "The Wood Thrush (*Turdus mustelinus*)," says

Audubon, "is a particular favourite of mine, as I am much indebted to her. How often has her bright song restored my exhausted spirits, after a restless night in the forest! Badly sheltered from the pitiless storm, I have spent many a miserable night under cover of a wretched hut of branches which I have constructed, through which, however, the rain streamed with such violence as to put out my fire. I saw neither heaven nor earth; it would seem as though the 'Deluge' had commenced again: now and then a flash of lightning would make darkness visible, while the vivid passing ray would seem to render the scene more horrid, the night more black; while the trees cracked and sighed under the power of the driving hurricane, which rent them from the crown to the very roots. Far from my people, cut off from the entire human race, sometimes I thought the end of the world had come, and cursed the hour when I first determined to set out on my adventurous journey! But no sooner did I hear my friend, the Thrush, heralding the dawn, than my spirit rose again with every note,—as they increased in power, so did I gain strength and heart. With warm devotion I hear this morning song, and blessed the hand of the Creator, who had placed the bird in these dense, solitary forests to comfort me, and at the same time teach me never to despair. 'Oh! when I think on the happy hours,' says the elder Naumann, 'I passed in the swamp, I even now wish myself back again.' And I, myself, without wishing to appear vain-glorious, may say that I have worked and suffered in the cause of science; and yet I now look back with pleasure to the days when I was bowed down with fever in the primæval forest of the interior of Africa. And why? Because each day brought me something new. I had no doctor,—not even medicines: I was in want of good food, company, sympathising friends of my own country. I often felt so utterly miserable in my attacks of fever, that I cared not how they ended,—in recovery or death: and yet I seemed relieved when my hunter brought me some bird, which was new to me, to my bedside. I have watched for nights together on the sandy islets of the Blue Nile, while the fever was on me, as soon as I had found out that the Demoiselle Cranes frequented the locality. Africa has robbed me of much, but has also given me a great deal; and that because I always travelled as a naturalist. Such a one knows neither difficulties nor dangers while at work, because he is aware that the wages of his labour are the highest that can be obtained."

I doubt if words can describe the joys of the working naturalist. They are only to be felt by personal experience, and personal labours, in the cause of science; that alone can render it comprehensible. This silent watching of the inner life of Nature as a grand whole, and of her several members individually, is possessed of an intellectual charm which baffles description. Greedy as a miser, the enquirer spies out everything, watches for, grasps at, and seeks to become possessed of all. And what for? To make a free gift of his booty, acquired with such labour, to the world at large! He can place out his gains, like the usurer, at heavy interest, and they never fail to bring in fresh returns: thus nothing is too small, nothing too insignificant for the notice of the naturalist. What he learns is his gain, and what he knows is his capital; this is why he is so rich, aye, even in a desert! To him the inanimate grain of sand, the bare stones, tell a long, rich, and instructive story; the plants awaken in his heart a special life; the animated beings speak to him in a common tongue,—masonic, I may say,—which he understands. He will conjure up in his mind a whole mountain from one single stone; a tree from a twig; from one note the whole life of a bird. The rustling of the Swallow's wing, as it whirls past him, carries him far away over land and sea; the capricious flitting of the butterfly unfolds, before his mind's eye, brightly-coloured, friendly pictures of life, which change like the patterns of the kaleidoscope. The leaf of a plant opens out to his imagination a domain rich in magic forms, with whose structure, web, and woof, he is better acquainted than any other child of man; petrified animals and plants transport him to an era thousands of years back, and guide him safely through the dark pages of the past. To him the earth is a book; to him the heavens speak,—all the world is his!

I, however, must now confine myself to "the naturalist and the bird." He who is only half at home with Nature on this earth of ours, will be able approximately to appreciate the feelings with which the naturalist wanders and travels from place to place: wherever he may be, he finds friendly forms. For years he has silently watched the interior economy and household arrangements of animated nature, and yet he has not seen all; and on this account he is never in want of employment. Every bird is a personal friend: the old ones he knows almost as well as he knows himself, and the new ones must be studied. How much more is there yet to observe! Rich as he may be in experiences, every fresh ramble brings him fresh mental treasure. The relations existing between him and the bird become each day more and more intimate: he knows the lives and habits of each; when each arrives, or takes its departure; where is its abode; how it is made; when it is occupied by a happy troop of nestlings; when deserted. The naturalist knows his friends by their notes, flight, and bearing. In his eye the bird never ceases to exist: alive or dead it is ever interesting in his eyes, for in either case the bird is associated with a poesy of feeling in creative nature which he would put into words. Every new bird raises his spirits a step higher; every fresh discovery is a step onward in the knowledge of the ways and means of all things. He is indebted to his friends for many and many a happy hour: their lives are a pattern worthy of imitation.

This gain no words can express. Let us take a passing glance at him who would libel and slander us, because we are free from the bitter pleasure of confounding the reality with the ring of empty words, or of lulling the clear, living spirit by the aid of formal speeches: we take more pains to prove by enquiry, to measure and weigh, before we follow the motto, "Faith is greater than knowledge!" They call us blasphemers, because we will not blindly believe; and they term our spirit of enquiry —profanity: we will leave them in peace. Were they in a position to estimate and understand our labours, they might possibly dignify those labours with the title of "Prayers!" We and they have, however, nothing in common. Their ideas and opinions are too pitiful, too narrow-minded for us; their souls move within the confined limits of their views. We include in our sphere of observation worlds which circle around us millions of miles away, and measure them according to their orbits. They advocate the bare word; we the living soul and intelligence. They look upon every man as a unique being, and arrange each according to the faith he professes; we look upon the whole human race only as an order of animals—animals, as a kingdom of the earth, and the earth only as one of the countless atoms which compose the mighty whole. They may do priestly service to a congregation; we are priests, however, devoted to the whole of humanity. They stand isolated, each for himself; we strive, while closely united, to teach the one aim:—Light and Truth! For our science does not acquaint us solely with our home—the earth; does not only make one of us acquainted with birds, as above stated, but unites man to man. The naturalist is a cosmopolitan: he has no home; belongs to no especial country; is of no nationality. His work is for the common weal, as he ever belongs to the whole world. He finds friends everywhere; acquaintances amongst men, and gathers from his intercourse with them new material for knowledge, new life: for knowledge is life to him. Whichever branch of science the enquirer may seek out for himself, it always belongs to the great confederation of humanity, whose motto is—"Enquiry is holier than belief!"



J. G. Keulemans lith.

M & N Hanhart imp.

AN EAGLE'S EYRIE.

PART VI.

SKETCHES FROM NATURE.

CHAPTER I.

THE CINEREOUS VULTURE.

"For wheresoever the carcase is, there will the Eagles be gathered together."—*Matthew* xxiv. 28.

WHEN we speak of the economy of Nature we must not forget the important part that Vultures play in the same, nor omit to allow their claim to a high position in Nature's household. It is they whose business it is to purify the air in southern countries from those poisonous gases which are evolved from masses of putrefying animal matter, the pestiferous exhalations from which would be disadvantageous to the well-being of the living. In the high latitudes of the North, Nature buries her dead under a mantle of snow, where they may lie for a thousand years without decomposing, for all the liquid portions of the corpse turn to crystals. In the South, those wandering, semi-domesticated hounds of death, the Vultures, are assisted in disposing of a carcase by an army of insects. Before decomposition, rapid as it is in these countries, has transformed the carcase into its original elements, these vigilant watchers of the dead greedily and rapidly clear away what yet remains, and thus prove themselves important and highly useful members of Nature's economy.

Up to the present we are acquainted with about twenty species of Vultures, seven of which belong to the New, and the remainder to the Old World. We find none in Australia. In Europe we have four species, each of which, strictly speaking, has its own peculiar mode and habits of life; yet they resemble one another so far, at least all the larger species, that the description of one will suffice to give the reader a good idea of the entire group. I have chosen one of the European Vultures as an illustration of the general habits of the family.

The Cinereous Vulture is found principally in Southern Europe, namely in Hungary, European Turkey, Greece, and Spain, and has more than once been found in Germany. This species is not to be met with in North-eastern Africa, though it is found on the western side of that continent, and also in North-western Asia. It lives amongst the mountains, whence it circles over a large expanse of country, in search of food. This bird only perches during the heat and glare of noon, and at night; rarely, however, on trees, choosing in preference rocky pinnacles, or the flat ground near the carcase. This bird's immense nest, placed on a tree, is composed of large sticks and branches, it is flat in form, and but slightly hollowed in the middle: about the end of February, one round white egg, of a roughish texture, is laid. The young one makes its entrance into the world clothed in a thick coating of grayish white down, and is not able to fly before it has attained the age of four months. Both parents keep it plentifully supplied with food, and show great fondness for their offspring, though they never attempt to defend it against the attacks of man. So much for this bird in particular. Now we will turn our attention to the large Vultures in general. I have had numerous opportunities, during my travels in Spain and Africa, of observing these remarkable birds, and can therefore speak from experience.

Extended on the desert-plain at the foot of the mountains there lies a dead animal. Outwardly it appears as yet intact; still the carcase gives evidence that decomposition has already set in: the *rigor mortis* has passed away, the eyes lie deep sunk in their orbits, the outer skin relaxes in places, and putrid liquid is seen flowing from the nose and mouth; all inside is decomposition and putrefaction; the different substances are leaving their old combinations to resolve themselves into fresh chemical forms; the corpse is distended with the liberated gases, which seek to escape and poison the neighbouring air with their fœtid stench.

In the early morning a Raven may be discerned soaring high over the nearest mountain peak: its keen eye espies the carcase from afar; croaking it approaches with rapid flight, circles once or twice around the dead animal, and then descending folds its pointed wings and alights not far from the carrion, which it now approaches with rapid steps, and walks round and round, eyeing it with suspicious glances. In a short time more Ravens follow its example, accompanied by other birds. A Golden Eagle descends like a flash of lightning from its rocky home in the neighbouring mountains, and approaches the tempting meal. A Kite appears on the scene, accompanied by several Neophrons, or Egyptian Vultures, whirling in narrowing circles above; added to this, in Africa, the Adjutant, or Marabou Stork, is also present on such occasions.

The carvers have, however, not yet arrived. The carcase is as yet too fresh for the dogs of the neighbouring village, who never fail to come to the feast, to have winded it; and it is as yet too early in the day for the Vultures. Those guests which have already arrived manage, however, to pick a piece here and there, though the thick, leather-like skin is so tough as to prevent them from indulging in the larger pieces. The single, up-turned eye, only, is torn from its socket by some Egyptian Vulture (*Neophron*) and devoured. At last the time gradually approaches for the large Vultures to wing their way in search of food. It is ten o'clock: they have had their sleep, and finished dreaming; and now, one after another, they leave their roosting-place, having performed their morning toilet, and preened and arranged their entire plumage. At first they lowly skirt the edge of the mountains: finding, however, nothing in the shape of breakfast, they rise gradually in the clear sky, until, almost out of reach of human eyes, they prosecute their search farther afield; one follows the other, rising and falling in company, and turning right and left, as does their leader.

All at once, one of their number observes the crowd beneath, and immediately lowers its flight a little in screw-like circles, so as to inspect matters a little closer. Soon the bird's sharp eye affords it a clear picture of what is going on, and shows the carcase on which they would fain feast. The bird now closes its wings, abandons itself to the law of gravitation, and falls with a rushing sound some hundreds of feet, when it half extends its wings, so as to avoid being dashed to pieces, which it otherwise would be, falling from such a stupendous height; and, while yet some distance from the ground, stretches out its legs and alights in a slanting direction.

The example of the first Vulture is unhesitatingly followed by the remainder of its companions. As soon as they are safely installed on the top of a carcase, they allow themselves to be disturbed by nothing; the approach of a hunter in open day, even, does not in any way put them out. Every minute one now hears the rushing wings of the falling Vultures, of whose presence in the neighbourhood, until now, one was utterly ignorant, for the sharpest eye would fail to detect the birds, although nine feet in expanse of wing, at their tremendous altitude.

No sooner have these indescribably-greedy birds reached the earth than they race up to the feast with their necks stretched out horizontally, raised tail, and flapping half-outstretched wings. The smaller members of the crowd retire to a respectful distance; the dogs, in spite of their growling and showing their teeth, are treated to such a hail of blows from the beaks of the Vultures, that they are forced to beat a speedy retreat. These powerful birds of prey remain masters of the field, though amongst themselves a most violent scene of disorder ensues, each and all fighting, quarrelling, and tearing in such a manner as must be seen to be believed. Two or three strokes of their powerful beaks pierce the thick skin, and liberate the gases from the swollen carcase. The strong-beaked Vultures, to which these we are now speaking of belong, are soon engaged upon the layers of muscle and flesh, while their more lightly-armed cousins thrust their long necks as far as they can into the interior, so as to get at the entrails, over which delicacies the battle rages furiously. An endless string of hungry Vultures rushes down amongst those already feeding, and tries to drive them from the feast. The fighting and squabbling now begin afresh, and the noise is redoubled, for it is only those that are pretty well satiated that care to budge an inch. The weaker guests sit respectful, but envious of the privileges of the stronger party: they watch the proceedings closely, being well aware that an odd piece or so will get thrown in their way by the combatants, not of their own free will, but in the heat of the fight.

A small mammal is disposed of in a few minutes by this greedy community; and after one meal, even, little remains of a cow or camel. Those who have had enough now retire, but reluctantly, though each has probably managed to stow away three or four pounds weight of meat in its crop. Usually they do not go very far from the scene of their orgies, but stop a few yards distant, where they await the process of digestion in peace; after which they go to drink, an operation over which they also generally take some time. About the middle of the afternoon they start for home.

My sporting friends and I used to amuse ourselves occasionally by rapidly discharging two double-guns one after the other amongst the greedy mob. On these occasions we would lay the carcase in places where we could crouch in ambush, or erect a hut or screen, from behind which we might fire. At the first discharge the consternation of the swarm was tremendous: rising in a confused mass, they fairly hindered one another in flying. This state of panic, however, only lasted a very short time, so that it was rarely that we could manage to discharge a third fowling-piece before the birds made good their escape. Sometimes they would be so utterly scared, that they would alight again after the first shot, as it were to enquire into the cause of such an unwonted assault, before they took their final flight. The wounded sought as much as possible to get out of reach. These birds are excessively tenacious of life, and though badly hit they often managed to escape us; sometimes one might be seen suddenly to close its wings mid-air and drop dead to the earth. Those which we winged would decamp as fast as their legs could carry them, and when overtaken put themselves on their guard, and fight like demons to the last, with both beak and claws. Wounded ones throw up whatever they may happen to have in their crops before flying off. Unwounded birds, even, when kept in confinement, will do the same, returning, however, like dogs, to their vomit.

The flight of the Vulture may be called sweeping rather than flying. They are obliged to take several running jumps from the ground before they can manage to get under way, and, as soon as they are once in the air, they will often not move a feather for minutes together, and yet fly rapidly, and apparently without much effort. Their extraordinary powers of flight enable them to cover immense distances in a few hours, and their sharpness of sight renders it easy for them to see any prey that may lie in their district, and that from an enormous height. It is the eye, and not the sense of smell, as has been thought by some, which enables them to find their prey. I have come to this conclusion from observations made for months together. When the carcase is still fresh they will make their appearance from all sides alike, although there is no smell from it. I have also seen them assemble from the windward side, as well as from other directions, in a gale of wind, though the scent could only be carried one way, and when the carcase was covered they would fail to discover it, though in a state of putrefaction. They are never seen about, before 10 A.M., nor after 4 P.M.

It is an easy matter to snare Vultures with a noose, as they never seek to bite it asunder. In captivity some species become very quiet and good-tempered, while all the naked-necked sorts always remain savage and spiteful. I have kept Eared Vultures which would allow themselves to be stroked after the fourth day of their captivity, and soon became quite tame: they drank every day, but were only fed once in eight days,—a treatment which they undergo without experiencing the slightest inconvenience.

The Arabs of the Soudan ascribe strong healing powers to the livers of all Vultures, and actually enjoy the disgusting scent of musk and carrion which clings even to stuffed specimens. In other respects these birds are not much thought of, otherwise than being looked upon as "nedjis," or unclean, and being accused, possibly not quite without reason, of attacking and killing men while asleep. Their great utility is denied by no one, though a European will possibly be better able to estimate their true value, for the nose of the inhabitant of Central Africa is wholly incapable of being affected by the most dire stench in the world. Their own ordures are devoured every day by the Egyptian Vulture in the very centre of their villages, and afford these birds ample occupation. That the Arab is in any way thankful for this service, I doubt much.

CHAPTER II.

THE BEARDED VULTURE
(*Gypaëtus barbatus*).

"She dwelleth and abideth on the rock, upon the crag of the rock, and the strong place. From thence she seeketh the prey, and her eyes behold afar off. Her young ones also suck up blood: and where the slain are, there is she."—*Job*, xxxix. 28.

He who—driven by the pure love of a roaming life, or the sublimer spirit of enquiry—has trodden high mountain ranges, and explored their glaciers, has most certainly, at some time or another, heard a shrill, bold, mocking cry overhead, aye, hundreds of feet above him, and, scanning the blue ether, has seen a splendid bird soaring in space, showing a conscious pride in every motion, and still more so in its glance, as it looks down like a king from a throne, gliding rapid as an arrow, without moving a feather of its mighty pinions. Traveller, this glorious bird is the king of the mountains, the Lämmergeir, the true lord of those heights, who looks upon man as an intruder. The sun, before whose rays our eyes quail, is the light under which it is nurtured; the beams—which, in these regions, transform each snowflake into a diamond, or cover all, early and late, with their purple mantle—are those which encircle its cradle. Its home is amid these ragged crags, the glacier is its domain; it is as much part and parcel of these high-lands as yonder precipice, the rushing waterfall, the alpine rose, and the everlasting snow: wherever the hand of Pluto has heaped together a mighty world of mountains and heaved them to the skies, wherever the shining, glistening snow lies, there our bird will not be found wanting. Every mountain claims it as a right.

The Lämmergeir is a Vulture of a nobler class, and not an Eagle, though the legends we have heard in connection with this bird are almost beyond credence, and naturalists have had to receive them with caution. In most books of travel and Natural History, one reads wondrous stories of this bird's bold and cruel deeds. It is accused of precipitating the daring chamois-hunter into the abyss below by a well-chosen swoop, and is said to seize little children which are left unguarded, bearing them off as food for its nestlings among the clouds. This bird is declared the enemy of all game, from the graceful chamois to the smallest bird. I pride myself upon having been the first to free its reputation from such false accusations.

I first met with this magnificent bird in Arabia Petræa, in the neighbourhood of Mount Sinai. Five of these creatures, circling over a small flock of goats, were being driven away by the loud and persistent cries of the herdsmen. My companions—Bedouins, from Wadi Feïrahn—assured me that the "Büdj," as they term the Lämmergeir, will dash down amongst the herd and do considerable damage: one of them even gave me a description of the bird's nest:—

"The house of this robber, and son of a robber,—Allah curse him and his posterity!—is placed on the crest of a mountain, in the hollow of a rock or crevice. It is rare that a son of Adam can ever reach his citadel, which is usually inaccessible. If, however, it is possible to reach the spot, the eye is arrested by the immense bed which this scoundrel has formed out of the hair of the young kids he has murdered: on this is found one, and sometimes two eggs, for the 'Büdj' is so greedy that he only hatches one or two eggs; whereas the Partridge often lays as many as fifty! Probably he is aware that our boys guard the herds so well, that he would find some difficulty in procuring food enough to support his voracious brood! The eggs are whitish, but soiled with the blood of his victims."

From this statement it will be seen I had some reason to place faith in the stories related by naturalists such as Naumann and Tschudi. I changed my opinion, however, when I met with the bird again in Spain, and had ample opportunities of watching its habits. To my intense astonishment, the Spanish hunters did not regard this bird in the slightest degree as a bold, merciless robber: all asserted that it fed on carrion, especially bones, only attacking living animals when driven by necessity. They called it "Quebranta-huesos," or the "Bone-smasher," and assured me that this favourite food, as I have previously stated, was broken in a singular manner. My later observations proved nothing which would justify me in treating their statements as otherwise than correct, so I was forced to come to the conclusion that the Lämmergeir had been much maligned. Since my first account of this bird, I have read a number of communications from other observers, and gather from the whole that the Bearded Vulture is nought else than a weak, cowardly bird of prey, gifted neither in mind nor body to any very great extent, and one who but rarely carries away small mammals: conduct similar, indeed, to that pursued by all feathered robbers, without exception.* Its food usually consists of bones and other carrion.

The Bearded Vulture is seldom or never to be seen in the morning, and appears to remain at its roosting-place long after sunrise. About two hours after daybreak it begins to go its rounds. The male and female fly in close company, or at all events at no great distance from one another, along the edges and over the tops of the principal peaks of a range of mountains, generally, however, at an altitude of not more than one hundred and fifty feet from the earth; if the range is intersected at right angles by other valleys, these are passed over, though rarely inspected. This flight is very rapid, and accomplished with scarcely a motion of the wings; at the same time their keen glance is directed on all sides. As soon as one of the pair sees anything, it immediately begins to circle over the object, and is joined by its companion, both often spending a considerable time in this way, soaring over one spot before they push their inspection further. Arrived at the end of one range of mountains, they suddenly change their direction towards another. With this they travel at the same elevation, and do not appear in any way to trouble themselves about the valley beneath them, though often flying very low over the hill crests which lie in their road.

The Lämmergeir rarely allows anything to interrupt its direct line of flight, or cause it to diverge from its route. At the hermitage, dedicated to the "Holy Virgin de la fuen Santa," near Murcia, I have seen one fly so near to it, and the adjacent buildings, that one could have easily killed it with small shot from the window. They seem to be just as little afraid of man; at least, these birds would fly quite low over us and others. It strikes me that not only are the Lämmergeir's excursions taken in one direction, but that they also take place at regular intervals.

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* It is, perhaps, scarcely necessary to remark that this last assertion is fallacious; the Kestrel, Barn Owl, and Buzzard, all destroy a great number of small mammals, such as mice, rats, &c., let alone that others of the larger Raptores feed on Mammalia, as well as on fish and birds.—*W. J.*

The flight of this royal bird is grand, swift, and impetuous, accompanied by but little action of the wings. By the uninitiated, the Lämmergeir, on the wing, may easily be mistaken for the Egyptian Vulture, and I even have often taken it for the Peregrine! At a great distance, the characteristics by which the Bearded Vulture may be distinguished are lost sight of, and a Falcon in full flight appears to be before you. This illusion is only dispelled when one recalls to mind the swift, lofty flight of the Jer Falcon. When once, however, the flight of the Lämmergeir is well impressed upon the memory, it can never afterwards be confounded with that of any other bird. Thus, a large Eagle would appear somewhat heavy by the side of this "Falcon Vulture," which, regarding it under these particular circumstances, it may well be styled; at the same time, I will not distinctly assert that an Eagle is really a clumsier bird than the Lämmergeir. As regards the rapidity of flight, the Bearded Vulture is second to no species of Eagle. When alighting, it always selects some elevated spot, probably because from such a stand-point it can almost instantly, and without much effort, attain a greater elevation. At times it sits very erect, though at others horizontally, like a Vulture, owing possibly to the length of its tail. Its walk is good, though perhaps somewhat clumsy or awkward; it does not hop, but rather strides. We have never heard it utter any cry or sound while on the wing.*

In Spain, the Lämmergeir is looked upon as a very harmless bird. It causes the shepherd no anxiety. No cattle owner can tell a tale of robbery which can be traced home to it; on the contrary, one and all assert that it feeds on carrion, in company with the Vulture, showing however a strong preference for the bones, which it consumes after having let them fall from a great height on to the rocks below, where they are found smashed to pieces, a treatment similar to that to which it subjects tortoises elsewhere. The Englishman, Simpson, even avers that each individual bird has its own particular rock for the destruction of this reptile. It is probable that the Lämmergeir does not condescend to devour birds. Schintz found the claws of a Black Cock in the stomach of one, which he shot in the Alps; but this was all, not a feather was to be seen in its crop. It is, however, possible, that these claws were the residue of an Eagle's dinner, which the Lämmergeir had finished. In the Sierra Nevada I have seen large flocks of Rock Pigeons scared by the mere passing by of a Lämmergeir near their roosting-places, but nothing more; I have never seen it strike at birds, nor even show the slightest inclination to do so; nor have I ever heard of its giving chase to feathered game; and two tame ones we had would not touch a bird! In fact, they would, though hungry, disgorge with evident disgust what they had been compelled by force to swallow. Speaking of this recalls to my mind a rather important fact, namely, that the Lämmergeir is never mobbed by other birds, such as the Kestrel, Crow, Raven, Chough, and Alpine Crow; at least, I have never seen it happen. Moreover, the construction of this bird is not that of a rapacious bird, which, like the Eagle, seizes other animals, and, after strangling and tearing them with the claws or beak, bear their victim aloft. The talons of the Lämmergeir are like those of the true Vultures, while its beak resembles that of the Egyptian Vulture, though perhaps rather more powerful than that of the last-mentioned species. Thus it is no bird of prey, at least in the ordinary acceptation of the word, and it seems to me very improbable that it should swoop upon anything from a height, though it is said to do so. It is a splendid bird on the wing, and traverses immense distances daily in search of food. In this way it comes across as much carrion as, or more than, the Vultures, which latter birds are met with much more frequently, and though scarcely less voracious than the Lämmergeir, still find abundance of food.

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* This statement is a somewhat unfortunate contradiction to the first paragraph in this chapter. My friend, Mr. W. T. Blanford, who had some opportunity of watching the habits of the closely-allied African Lämmergeir (*Gypaetus meridionalis*), looks upon it as a very silent bird, which statement entirely coincides with my experience, though it must be stated we did not meet with this bird during the breeding season. The African bird differs but little from *G. barbatus*, excepting in size.—*W. J.*

According to all accounts the Bearded Vulture, at times, takes such an amount of food as would seem perfectly astonishing, especially when the size of the pieces swallowed is taken into consideration. The artist, Wilhelm Georgy, a close observer of Nature, told me that he has watched a Lämmergeir in Switzerland remain for hours motionless on a rock digesting bones, so large that some inches might be seen protruding from its gullet; the bird, however, quietly waited until the lower portion of the bone became digested, and it was thus enabled to swallow the remaining portion. This anecdote agrees with a similar one told by Schintz, who once took from out the crop and stomach of a Lämmergeir, which he had shot, the hoof-bone of a cow, the shin-bone of a chamois six and a half inches in length, some hair, and, as before mentioned, the claws of a Black Cock. These two anecdotes both go to prove that the Lämmergeir of the Alps also has a great predilection for devouring bones.

Of the propagation of this species little, as yet, seems to be known. My brother was the first naturalist who succeeded in reaching the eyrie of the Lämmergeir. The nest which he invaded was situated in the not very lofty range of mountains of Murcia, on a rocky eminence, sheltered in some measure from the sun's rays by an over-hanging boulder, scarcely a hundred feet above the last-mentioned shelf of rock, and was thus not very difficult to get at. The nest was very large, measuring three feet in height and five in diameter; in the centre was a shallow hollow of some two feet across: the basis of the structure was composed of long, thick sticks,—regular bludgeons, you might say; upon this was laid a layer of smaller sticks and twigs, and on these the nest was placed; the latter composed of the same class of materials, though finer in texture than that of the second layer, and lined with pieces of bark, cow- and horse-hair.

An inhabitant of the neighbouring village had taken a young bird from the nest in February, from which we may infer that the egg was laid in the middle of December or the beginning of January. It is highly probable that the egg of the Spanish bird is of the same round shape, and is similarly marked to that of the alpine bird, *viz.*, a light gray ground, thickly marked with dark red or brownish spots, partially smeared or smudged out. Reliable information we cannot get, as no Spanish naturalist has ever been able to obtain a specimen of the egg of this bird. We were fortunate enough to be able to secure the young one, and thus had the opportunity to observe the bird in captivity. By an extraordinary piece of good fortune we also obtained an old bird, winged by a gun-shot, possibly the mother of our young prisoner. The more juvenile individual became in a short time very tame indeed, allowing us to stroke and carry it, feed it, and even take away its food from it without any opposition. At the end of about a month it could sit upright, and began to drink, which operation was performed by inserting the lower part of the bill deep in the water, and throwing its head suddenly upwards and backwards, by which means it succeeded in swallowing a considerable quantity. By the second month this young bird was fully fledged, with the exception of the neck; the tail had grown considerably, though it had not by any means attained its full length. We placed the bird in a large, roomy cage, to which it soon became accustomed. After a few days it learnt to know my brother, and recognise him as its master, answered him when he called,—accepting any treatment at his hands, it liked to play with his fingers, and he was able to put them down its throat without the slightest fear of being bitten. When allowed to quit its cage it seemed highly delighted, and walked about the courtyard with outspread wings, preened its feathers, tried to fly, or laid itself flat on the sand, stretching itself at its ease. This bird soon learned to eat alone, and gave us opportunity to experiment on it with different kinds of meat, which afforded us the results which we have already mentioned.

By the end of May we obtained the old bird as a companion for the above; the pinion of one of her wings had been shattered by a shot. This bird lay motionless on its uninjured side, and showed its discomfort by opening its beak and ruffling the neck-feathers, but did not give vent to a sound of any description. If anyone approached it would follow their movements with the eye, and also peck at them, keeping fast hold of whatever it could seize. In the cage it lay down silent, as before described. The young one eyed the new comer, from all sides, with curiosity, and sat for a quarter of an hour by her side without being noticed in any way by her. The next day the wounded bird rose to its feet; and on the third we turned both the birds loose in the courtyard, where the old one marched slowly up and down, with the long feathers on the legs sweeping the ground, and the tail raised, apparently troubling herself in no way about her surroundings. At first she only took a little water; in a few days, however, she devoured such meat as we threw her, though, like the young bird, she would only touch the flesh of mammals, and could never be induced to eat the flesh of birds, or swallow the smallest morsel of it.

In a very short time the old bird became less refractory: she chose a projection in the wall of her cage, upon which she would perch, taking not the slightest notice of anything which occurred around her. When brought down into the court she returned with all speed to the cage. After a few days my brother was able to stroke and caress her.

In a little while we procured some fresh companions for the Lämmergeirs, the first of which was a Jackdaw, of whose impudence and subsequent fate I have previously informed my readers, though to save referring back I will repeat that owing to the little notice taken of him by the Lämmergeirs he played the part of master of the house, treating his noble companions with the greatest insolence, without, however, raising their anger in any way. Later, the company was increased by the arrival of a Golden Eagle and three young Egyptian Vultures: these birds also lived in perfect harmony with the Lämmergeirs; the young one even allowed one of the young Neophrons to climb up on its back while it lay basking in the sand. The wonderful concord, however, which had hitherto reigned amongst these creatures was for ever broken when my brother introduced the specimen of Bonelli's Eagle—also previously mentioned—amongst this varied company. This bird—the very quintessence of wildness, savagery, and spitefulness—tore about the cage as though crazy, strangled our comical friend the Jackdaw, drove the Egyptian Vultures into the darkest corner, and as soon as the inquisitive, good-natured Lämmergeir approached him, he sprang on his back and assailed him with the utmost vehemence. Such ill-treatment upset the patience of the Lämmergeirs, and induced them to return the insult with violent blows of their beaks: in the end, however, they always kept out of reach of their quarrelsome neighbour. Some time after this violent brute found a worthy companion in the person of an Eagle Owl. This latter, not liking the glare of day, immediately retired into a dark corner, and appeared to be very ill at ease in the company of this assembly of diurnal birds of prey. All the inhabitants of the cage had regarded the new comer with the greatest curiosity: the young Lämmergeir was the first to evince it. It approached the Owl, examined it carefully on all sides, and finally began to feel with its beak the dark plumage of the surly guest. In an instant the Owl, furious at the liberty taken, assailed the unsuspecting Lämmergeir with its claws, and with such effect that the latter retired aghast with astonishment. For some time it never took any further notice of its assailant. As soon, however, as the Eagle Owl began to wake up or move, all eyes were turned upon it; and when placed in the evening on the same perch alongside of the Lämmergeirs, it was sure to be teased in some way or another by its neighbours, although it always repaid such treatment with double interest. The Lämmergeir was generally not satisfied until the Owl quitted the perch, when it usually blundered into the clutches of Bonelli's Eagle. When these two disturbers of the public peace had got "one another by the ears," the utmost peace and quietness reigned amongst the remainder of the company, who, one and all, formed a circle of inquisitive spectators.

The Lämmergeirs were quite indifferent to red as a colour, inasmuch as the scarlet lining of my brother's dressing-gown did not put them out in the least; just as little did these birds show any special antipathy towards children, such as was observed in a Lämmergeir from Sardinia. When our two Bearded Vultures were let loose in the courtyard, they would often approach a child at play, yet never offer to touch it, or even vouchsafe it a glance. It was only when interfered with while in the cage that the young one became angry; when, however, it made no difference between grown-up people or children.

Unfortunately, owing probably to the cage being exposed to the hot rays of a Spanish mid-day sun, the old Lämmergeir sickened, and finally died from inflammation of the lungs. The young bird I took with me to Germany, and presented it to the Zoological Gardens at Frankfort.

CHAPTER III.

THE GOLDEN EAGLE

(*Aquila fulva*).

" He clasps the crag with hooked hands;
Close to the sun in lonely lands,
Ring'd with the azure world, he stands.
The wrinkled sea beneath him crawls;
He watches from his mountain walls,
And like a thunderbolt he falls."

TENNYSON.

THAT we, in our language, with justice give the Eagle the title of Adler,* is evident to everyone who has beheld these splendid birds, either dead or alive. They are truly nobles amongst the feathered tribe: their lightning glance, their strength of build, their powerful weapons, all tend to substantiate their claim to nobility. The impression they give is a regal one; and Eagles are kings in their own domain,—free, unconfined, and their own masters; like the lion,—king and lord among mammals. This royal aspect which we see in the Eagle has been recognised from time immemorial by every nation under the sun, so much so, that the kingly bird has often been made the subject of proverb and poem; for the same reason it is still looked upon as the emblem of strength and lordly power.

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* Adler is derived from the German, Adel,—nobility.—*W. J.*

Foremost amongst Eagles stands the Golden Eagle, which is most often found amid the rocky mountains of our Fatherland, and of Europe in general. It is a grand, powerful bird, with a noble aspect. The plumage is dark, with the exception of the whitish gray feathers at the root of the tail, and those of the back of the head and neck, which are of a golden tinge. The beak is strong, and the talons terrible. Strength, courage, power, and a consciousness of the same, is impressed in its very form, and is shown in every glance of that great, striking, fiery eye. This species is by no means the largest amongst Eagles, for several Sea Eagles surpass it; at all events, in expanse of wing, which, in its case, rarely exceeds seven feet, whereas the length of the bird, as with the Sea Eagle, does not exceed three feet. For all this, however, the Golden Eagle is the most perfect of the true Eagles, all of which are distinguished by having the tarsi feathered down to the toes, in contradistinction to other members of the family—Sea, Fish, and other Eagles. The long wings serve to distinguish them easily from the Crested Eagles; while the lanciform feathers of the neck separate them from the Roughlegged Buzzards (*Archibuteo*), which also have the tarsi feathered to the toes.

The Golden Eagle is found in all parts of Europe, Northern Asia, and America, where there are extensive forests, though it prefers the mountain to the plain. In Switzerland, according to Tschudi, it is exclusively an alpine bird, found in all the Highland passes, never leaving these but when scarcity of game forces it to seek the Lowlands. At one time this bird was common in all parts of Germany, and even now it is occasionally to be met with, though forced to retire before the advance of cultivation. It cannot, unfortunately, live on good terms with man, and is thus obliged to give way when the latter obtains entire possession of the field, and for this reason the Golden Eagle is much more common in Northern and Southern Europe than with us. Where this bird is established it is seen both in winter and summer: not being a bird of passage, it rarely wanders wide of its usual beat, and then only when food is scarce. In this it differs widely from its smaller relatives, inasmuch as they push their travels as far even as Central Africa.

All the movements of this bird are rapid, yet steady: its splendid flight—a swift, noiseless gliding—is accomplished almost without motion of the wings; the walk, however, on the contrary, is heavy and jerky. When walking, the Golden Eagle is seen to least advantage; sitting, its carriage is always perpendicular, like that of man, and in that position it cannot possibly, at any distance, be mistaken for any other bird. It is especially when perched that the Golden Eagle impresses the spectator with an appearance of sternness, a motionless, yet powerful repose, coupled with the most searching glance, careful watchfulness, and a proud consciousness of power.

The appearance of an Eagle on the scene is the signal for universal terror and consternation among all the weaker animals: the shrill "hea, hea," or "gieha," which one sometimes hears, is sufficient to put to flight both bird and mammal. That splendid eye "sees afar off," as the Bible justly says; nothing escapes its glance. Proud, majestic, and silent, it sweeps along, yet its glances search out unerringly the wide expanse which is extended far beneath it. It circles round and round, apparently careless of what is going on below: let, however, a sign of prey be seen, and its conduct changes in an instant. Suddenly it closes its wings, and descends in an oblique direction earthwards with a terrific rushing sound, and wide, extended talons ready to strike the quarry it has already selected. From the shy roe to the mouse, from the Bustard to the Pigeon, nothing is safe from its claws: it will seize whatever it can overpower, and carry off. It spares neither the child at play, nor the savage fox, though the latter sometimes makes it pay dear for its rapacity, biting through the robber's jugular vein while suspended in the air. The fawns of red and roe deer, the young of the wild boar, young lambs and goats, hares, rabbits, badgers, and cats, all fall a prey to its bloodthirsty talons, and form its principal food, though a hamster, mole, rat, or even mouse, is not despised. Amongst birds it preys on Ducks, Geese, Cranes, Storks, black game, Partridges, and farm-yard Fowls. It is the Eagle who is guilty, of what is generally attributed to the Lämmergeir, and who carried off a little girl in Switzerland, afterwards saved, and nick-named, in commemoration of her escape, "Geiranni" (Annie of the Lämmergeir).

It is the Eagle who commits the greater portion of those enormities which are commonly laid at the door of the Lämmergeir. I have been convinced of this in Spain by ocular demonstration. We were sitting one day at a solitary peasant farm among the mountains, talking over the larger birds of prey, and the farmer would not on any account allow that the Lämmergeir was a dangerous robber. "The bird that kills sheep, cats, goats, and especially Turkeys, is no other," said he, "than the 'Aguila real.'" It is scarcely possible to protect Turkeys, both old and young, from the rapacity of this bird; he himself lost annually at least twenty Fowls and Turkeys through the pair of Golden Eagles which had their eyrie on the nearest rock. It is on this account that you hear the shrill cry rising from farm to farm, which is alike intended to scare the Eagle and warn the Fowls. The Lämmergeir is a perfectly harmless creature; while the Eagle is a bold, barefaced robber, who has not its equal in the land. The sudden appearance of a boy, the son of our host, interrupted our conversation with the words:—"Father, come along, an Eagle has just carried off our biggest Turkey-cock; there he goes dragging him along!" We sprang to our feet and seized our guns, while the peasant ran yelling after the thief. The latter was dragging off its prey with difficulty, and the man gradually gained on the Eagle, till at last the bird left the wounded Turkey to its owner. After this proof of the truth of our host's statement, I had no further reason to doubt his previous assertion.

From what has been said it is easy to see what a destructive creature the Golden Eagle is. It dashes with terrible velocity upon its prey, striking mammals while running at the top of their speed, or large birds in full flight: nothing can save them but a rapid retreat into either a burrow, a thicket, or water. The Eagle is an utter stranger to mercy. It usually kills its prey by strangulation in its terrible talons, though it will often devour the poor creature alive, despite its agonising screams! Not unfrequently it will pursue other robbers, such as the noble Falcon, and relieve them of their booty, after this has been almost disdainfully abandoned to it. The Eagle will not despise a dinner from a fresh carcase, and I have seen the Eagles in Africa taking such food, in company with Vultures; and other observers have also seen our Golden

Eagle do the same: it feeds slowly and quietly, without showing an over-greedy disposition, and is more than ever on the alert when thus engaged, keeping a sharp look-out for an enemy; it drinks the blood of its victims, and often does not touch water for weeks together: in short, the description given of this bird in the Bible is true to the very letter.

Thus we see that the Golden Eagle is a very scourge to the territory over which it rules, if it be only to supply itself and family with food: it is a terrible enemy to all the weaker animals during its breeding season. The building of the nest, or rather the necessary repairs, are carried out early in March. The eyrie is usually placed in the cleft of an inaccessible rock amongst the mountains; when in the plains, however, the crown of the tallest tree in the neighbourhood is generally selected, often on the banks of a river. The bottom layer of the nest is formed of large sticks, upon which another layer is placed composed of dead twigs, upon this again is a flat and saucer-like bed lined with dried plant-stalks, heather, wool, and hair. The construction of the nest is inartistic, but grand, and so firm that a man can without fear lay down on it. Both the old birds carry the materials for building in their claws, and that often from a great distance. During the building season one may watch the pair circling high among the clouds, rising higher and higher, as though amusing each other with their marvellous evolutions. When his mate is sitting, the male continues these flights for her entertainment. One usually finds from two to three eggs in a nest: these are large, round, and white, speckled with chestnut-brown. The young never exceed two in number, and at first look more like balls of wool than birds, for they are covered with a thick, white coat of down; soon, however, the head assumes the proud expression of the parent bird. They are well fed by the old ones; first with meat, which the latter have previously half digested in their own crops; and later, with all sorts of game which the mother can procure for them. When the nestlings are about half grown the eyrie looks like a butcher's shop-bench well covered with provisions of all kinds. The parent birds hunt far and near, their raids extending from two to three miles away, from which distance they often carry their booty to the eyrie. They are much bolder at this season than at any other, and will defend their young from danger with the utmost courage. The hunter who would rob their nest runs risk of his life, for the old birds will strike at him viciously, often wounding him severely.

There is a sad story told, the truth of which has been vouched for by respectable people. An Italian hunter found a Golden Eagle's nest amongst the Alps,—some say that of a Lämmergeir,—and he forthwith determined to possess himself of the young robbers. Inasmuch as the eyrie could not be reached from below, it was necessary, in order to carry his plan into effect, to descend from above. He went, accompanied by some other young men, and provided himself with a strong rope of sufficient length. The party climbed the rock, and lowered the hunter, who was provided with a sword for his defence, carefully down from above. The brave fellow reached the nest in safety, and, placing the two young Eaglets in a bag, gave the signal to be drawn up again. He did not, however, reach the top without opposition, for suddenly, and with wild screams, the enraged parent birds dashed down upon him. He sought to defend himself, and, cutting and slashing at his assailants with the sword, he succeeded in killing one of the Eagles. The remaining bird now became more cautious, though abating none of its courage. Our bold hunter now thought to rid himself of this one as well; when, on accidentally casting a look above him, he saw with horror that he had almost cut through the rope, and that he remained suspended by only a single strand over the yawning abyss. Terror seized him; and letting fall the sword he reached his companions half dead: these scarcely recognised him, for his hair had turned perfectly white.

The Eaglets are fed in the nest for a considerable time by the parent birds, and only leave their cradle on attaining their full growth; after which they accompany the old birds, with whom they take their probatory flight, while the former initiate them into the various intricacies of their future calling. First they are taught to fly; this accomplished, they are instructed in the art of seizing their prey. Usually the whole family remain together until the autumn; after which the young, now capable of taking care of themselves, leave the parent birds, and wander hither and thither for years,—perhaps ten,—without settling anywhere until they are old enough to propagate their species and have met with a mate.

It is perfectly natural that animals which have suffered at the hands—or, we may say, the claws—of Eagles, should seek revenge. Thus the courageous Raven, smaller species of Hawks, Swallows, Wagtails, Gulls, and Terns, mob their formidable adversary with a persistence that is without equal. As soon as an Eagle is seen, its arrival is immediately announced by the first Rook who sees it, in tones partaking at the same time of fear and contempt: in a moment the whole congregation of Rooks in the neighbourhood, and a rabble of other birds, assemble and surround the king of air on all sides: with a hoarse croak for a signal, the Ravens make a dash at their proud and dangerous enemy, and do so with such gusto as to quite gladden one's heart. They do not succeed in really inflicting any actual damage, yet they manage to make it abandon the field. It has been said that Crows have actually succeeded in vanquishing the royal bird. Not long ago I read the following account in the French zoological periodical, 'Cosmos:'—"A Golden Eagle appeared in the woods in the neighbourhood of the castle of 'Etangs,' and commenced a raid upon the hares, rabbits, and Partridges. One fine morning it was suddenly assailed by a flock of about five hundred Crows,* who had come to revenge the murder of their friends. The leaders of the pack distributed their blows of beak and wing right and left; two or three were wounded, and remained on the battle-field. Three hours afterwards another cloud of Crows appeared on the scene, numbering some thousands, and attacked the Eagle *de novo*. It resisted like a hero: first lost feathers, and then blood. Night separated the combatants. The next day, however, the battle was renewed: the Eagle's assailants divided themselves into five separate masses, which, attacking their adversary from all quarters, then separated, and worried him on every side, leaving him no peace for miles and miles. At last, however, he became so dead beat that they managed to kill him; and then the whole army dispersed." It is necessary to have been eye-witness of the rage and perseverance of these Crows, not to regard the result as an impossibility. With the exception of such enemies as the above, the Eagle has none other than lice and similar parasites.

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* Rooks (?).—*W. J.*

The shooting and trapping of the Golden Eagle is effected with difficulty. It is very rarely that one can ever get within ordinary gun-shot range of these birds, and then only by chance. The rifle is the weapon generally used for the purpose; and I can say, from personal experience, that scarcely any sport can be found so exciting and attractive, as the pursuit of the Eagle, and I can easily comprehend why the hunters of the village of Eblingen, on the Brienzer Lake, are so passionately fond of this sport. According to Tschudi, there is a spot amongst the wild mountains, in the neighbourhood of this village, which is noted as being a place of assembly for Eagles, in fact a favourite *locale*, which these birds frequent, and to which they always return, coming even from the centre of Valais and the glacier valleys of the Jungfrau. There they select isolated and inaccessible peaks on the sunny side, whence they can command the extensive valley of the lakes: there is one of these pinnacles to which they are especially partial, and where they are often seen; they are, however, rarely shot there, for the foxes, as a rule, eat up the bait. The hunters of Eblingen have been distinguished in the surrounding country, from time immemorial, by their love and knowledge of sport; and they take good care that the Eagles are never in want of food, keeping, as they do, a good table for them, they are well acquainted with the means of luring their game. In the summer, even, they will hang pieces of horse-flesh high up in some prominent beech-tree, though at this season of the year, when game is plentiful, Eagles rarely touch the bait: nevertheless, the birds bear in mind where food has been seen, and know where to come when it is scarce.

In the winter the Eblingen hunters place the bait on the ground, where the meat is pegged to the turf with wooden skewers, so as to prevent its being easily carried away: they choose as flat a spot as possible, as the Eagle then finds greater difficulty in getting on the wing. They often use roast cat as bait, a morsel much sought after by birds of prey, the fragrance of which can be scented from afar: the place baited is selected so as to be within sight of their châlets on the banks of the lake below; there they every now and again step to the window, and have a look round with the "glass," when they expect an Eagle at the bait. If they see one approaching they have then an hour's climb before them amongst rocks and bushes: the game, however, rarely escapes them; for when the Eagle has once dropped on the carrion, it will remain there for hours; and when well gorged it generally loses its usual caution. The hunters of that district will spend the whole day in this sport. They assert that the flight of the Eagle is higher than that of the Lämmergeir; the former may often be seen soaring above the peak of the Wetterhorn. If there is no chance of getting a Golden Eagle, the hunters transfer their attention to the Osprey, which is commoner on the shores of the lake.

The Eagle is nowhere so systematically sought after as at Eblingen, though it is persecuted everywhere; partly on account of the depredations it commits, and partly for the sake of gaining the reputation of having shot this noble bird. In favourable localities the Eagle is sometimes trapped in a powerful gin; still success is rather to be attributed, in this case, to good fortune than to skill.

To those who can keep it, the Golden Eagle in confinement is the source of much satisfaction, for it is a special pleasure to be able to have the royal bird so near one, and to be on intimate terms with it. The Eagle is easily tamed, and does not call for much care. My father had one for seven years.

In many countries our Eagle is used for the chase, being flown at antelopes, hares, foxes, and even wolves. This is the only useful thing it is fit for.

CHAPTER IV.

THE HONEY BUZZARD
(*Pernis apivorus*).

> "Love you not, then, to list and hear
> The crackling of the gorse-flowers near,
> Pouring an orange-scented tide
> Of fragance o'er the desert wide?
> To hear the Buzzard whimpering shrill,
> Hovering above you high and still?"
>
> HOWITT.

THE Buzzards may truly be regarded as an ignoble family among birds of prey. Their courage is not of a high caste, while their build is deficient in that power so fully developed in the Eagle, and their plumage is wanting in the hard, close-lying properties, which serve to strengthen the frame of the true Falcons. Their movements are sluggish, slow, and somewhat ungainly; their carriage is careless: in short, their whole appearance differs widely from that of other feathered robbers. For all this, however, they are excessively useful creatures, and are, as far as man is concerned, the most valuable of all diurnal birds of prey. None other are so well adapted for destroying the enemies of our woods and fields as these birds, or are so patient in the pursuit of their enemy. They are remarkable for the amount of food they can devour. Thousands upon thousands of rats, mice, hamster-rats, moles, insects, and other more or less destructive animals, are daily entombed in the crops of Buzzards; and on this account these birds are, we think, worthy of our highest consideration.

In Germany we have three different species of this family: the Common Buzzard (*Buteo vulgaris*), the Rough-legged Buzzard (*Archibuteo lagopus*), and the Honey Buzzard. The latter is, in many respects, exceptionally remarkable; and on this account I have selected it as worthy of being the subject of a special chapter. Though inhabiting the whole of Europe, with the exception of the more northern portion of that continent, this bird cannot be regarded exactly as common in any district. The Honey Buzzard is fond of low-land countries, where there is an alternation of wood, water, and meadow. This bird is not fond of dense forest: it is a bird of passage, and only a summer guest, while the allied species remain the winter with us, and, be it said, much to our benefit. The Honey Buzzard is two feet in length, and the spread of its wings covers some four feet six inches. In plumage the Honey Buzzard varies very much, as is also the case with other members of the family. The following varieties are those mostly to be met with: wholly brown; brown, and white-spotted, with the dark back; white-bellied, with greenish head and brown back; light brown, with dark back; white, or a yellow-greenish white, with dark brown back and light head: besides these there are other varieties. In spite of such diversity of plumage, the Honey Buzzard is easily distinguishable, by the slightness of its build, from allied species, and is still more noticeable from its singular habits.

This bird is, perhaps, the most timid of all European birds of prey, but is remarkable for its good temper. Its movements are in the highest degree clumsy; its flight is bad, heavy, and slow, and is generally a short one, and the bird shows a great disinclination to rise to any considerable height in the air; in short, its whole bearing evinces the most lazy disposition. It will sit for hours on a stone boundary-wall, on a solitary tree or sign-post, or on some other elevated spot, quite contented, watching its prey, which consists of the following:—insects of all descriptions, beetles, caterpillars, dragonflies, gadflies, worms, frogs, snakes, lizards, and destructive rodents, which form its principal food; besides which it is very fond of hunting for the nests of the humble-bee and wasp, and feeding on their larvæ. This bird also, unfortunately, destroys the young, and especially the eggs, of such of the smaller birds as it comes across while hunting for insects: this causes it to be looked upon as a disagreeable and hateful enemy by all birds. Crows and Rooks mob the Honey Buzzard with almost the same eagerness as they chase the Eagle Owl, and all small birds make a great noise at its appearance. In the summer it also feeds on buds, blossoms, bilberries, other wood-berries, and even leaves: this habit distinguishes it from all other German birds of prey.

The Honey Buzzard reaches us somewhat late in the year, and commences to build its nest when the other *Raptores* have hatched their broods. The nest is very flat, and is placed on the highest of our forest trees: it is principally constructed of green twigs mixed with dead sticks, and is lined with moss, hair, and feathers; it generally contains three eggs of a rusty yellow ground, very thickly blotched and spotted with dark reddish brown; they are somewhat small, and rather long in shape; of these rarely more than two are hatched; the young ones are at first fed with caterpillars, flies, beetles, worms, &c., which the old birds collect in their crops, and then throw up; later they are treated to pieces of wasp's-nest filled with larvæ, frogs, mice, young birds, &c. The parent birds still continue to feed their young long after the latter have left the nest; both young and old birds remain in company almost till the moulting season comes round, when they migrate more to the southward,—say to Spain, to the South of France, Greece, and Turkey. I have never found this bird in Africa.

The Honey Buzzard is much shyer than its cousins, and does not allow itself to be easily approached within gun-shot, and is still more difficult to trap; it cannot be taken in the usual manner, as it has not pluck enough to strike at the Eagle Owl,* and it is just as shy of a small bird in a trap. This bird is most easily taken in a gin, with a frog or mouse tied on as bait.

Every sensible land-owner and forester is a friend to Buzzards, and protects them in every possible manner, on account of the valuable services rendered by them. When the Common Buzzard has young it catches daily over one hundred mice, with which to satisfy the hunger of itself and nestlings. Observers, upon whose word we can rely, have taken as many as thirty field-mice at one time from a Buzzard's crop: thus this bird is valuable, if only as a mouser. Buzzards soon get to know where they meet with protection, and become very tame. One thing is indispensable if one would seek to attach them to a district or locality, and that is never to allow them to be disturbed while breeding; and, furthermore, as an additional temptation for them to take up their abode in flat districts, almost destitute of trees, it is well to erect high poles, with a cross-piece at the top, from which they can better manage to see and capture mice; planting trees of rapid growth is another assistance to them. Such expenditure of capital brings in good interest, since the posts and trees, used by Buzzards for points of observation, whence to carry on an uninterrupted war with the mice, are of infinitely greater use to the farmer than poison and traps.

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* The Eagle Owl is much used as a decoy for birds of all sorts.—*W. J.*

CHAPTER V.

THE GREENLAND FALCON
(*Falco candicans*).

"Beside him, motionless, the drowsy bird
Dreamed of the chase, and in his slumber heard
The sudden scythe-like sweep of wings, that dare
The headlong plunge thro' eddying gulfs of air."
LONGFELLOW.

"As a Falcon from the rocky height
Her quarry seen, impetuous at the sight,
Forth springing instant, darts herself from high,
Shoots on the wing, and skims along the sky."
POPE.

THOSE were grand days, when royalty delighted, together with noble lords and ladies, in the spectacle afforded by the noblest of all birds of prey, chasing its wild quarry! Everyone who has had the good fortune to see the Falcon flown at Crane, Heron, Wild Goose, or Bustard, and, strangling its quarry in mid-air, bring it to the feet of the sportsman, will most assuredly assert that such sport can only be pursued with an avidity amounting to passion. This recreation has its followers, from the burning deserts of Africa to the high latitudes of the North. Hawking was pursued, not solely for the pleasure of the chase, but for the sake of beholding a magnificent sight,—one, we may say, without an equal.

Falcons were, of old, held in high estimation by the mightiest of the land. Charles the Great forbade the serf from indulging in the pleasures of hawking. Frederick I., Emperor of Germany, trained Falcons with his royal hand. Frederick II. was passionately given to this sport, and was the most expert falconer of his day: he wrote a treatise on the subject in Latin, which was afterwards edited by his son, King Manfred, who added copious notes: this work is even to this day regarded as of great value. The Crusaders took their Falcons with them to Palestine; and the German Emperors and Princes laid all monasteries and towns under contributions to furnish food for a certain number of Falcons. Charles V. gave the Island of Malta to the Knights of St. John, on condition that they should present him with a snow-white Falcon every year. The French ecclesiastics pursued this sport so much to the detriment of their professional duties, that their superiors forbade them to indulge in it. The English barons held it as their right that their Falcons should stand on the altar during divine service. Francis I. of France had a head falconer, who had under him fifteen young noblemen and fifty falconers, whose special business it was to look after more than three hundred Falcons! The Grand-master, Conrad von Jungingen, had a school of falconry attached to the monastery. Edward II. of England made the robbery of a Falcon punishable with death, and the taking of a Falcon's egg with imprisonment for a year and a day. A thoroughly well-trained Falcon often cost as much as from eight hundred to a thousand golden florins.

In olden times the profession of falconry was held in great estimation, and the training of Hawks was regarded as a noble art, which led to honour and riches. Falconers had their own phraseology, as it may be said our sportsmen have now. For instance, the legs of a Falcon were called "arms," and the claws "pounces;" a Falcon is not fed, but "dieted;" it does not feed itself, but "tires;" its feet are tied when the "jesses" are put on; it is "on the block," when it sits on its perch with the "jesses" on; it "stoops" when making a downward flight, and "mounts" when rising so high as to disappear; it is "checked" when it meets with a plucky old Heron that it cannot overcome; it is "cast off" when encouraged to fly, and "hooded" when the hood is on; its straps are called short or long "jesses;" and its course of training is termed "manning" or "reclaiming."

The falconer must be well able to distinguish all the different Hawks, and know at what quarry each species is most fitted to be flown; how best to capture, tame, handle, and train them; he must also thoroughly understand how to break the dogs necessary for this sport, and be possessed of a keen eye and quick ear; he must be patient, persevering, decided, active, and perfect master of all his limbs. Certain schools of falconry did much to assist their pupils; and to this day in Falconwerth, an ancient and renowned school of falconry, there exist several people who occupy themselves with the catching and training of these birds.

There were several species of Hawks and Falcons which were trained to fly at game of different descriptions, especially the following:—Peregrine, Jer Falcon, Iceland Falcon, Lanner, Hobby, Merlin, Goshawk, and Sparrowhawk. The falconers of different countries vied with one another in the training of their birds, straining every nerve to attain perfection; the Jer and Iceland Falcons of northern latitudes were, however, held in the greatest estimation, and fetched the highest prices.

These splendid creatures, now divided by modern naturalists into several distinct species, are undoubtedly kings among Falcons. They are larger than any other species at home or abroad, and have the noblest bearing and appearance: the breast is round and powerful; the shoulders are broad; the wings long and pointed; the tail long and wedge-shaped; the beak is short, thick, and notched; the short, straight legs are furnished with long toes, terminating with sharp and pointed claws. The entire length of the bird ranges from twenty-five to twenty-eight inches, and the expanse of wing from four and a half to five feet; the powerful tail is from nine to ten inches in length. The younger birds are all dark in plumage, that of the lower portion of the body alone being of a yellow tinge, spotted with dark brown longitudinal spots; as the bird gets older its plumage becomes lighter,—one species becoming almost snow-white, with the exception of a few black stripes and spots. They are natives of the more northern parts of Europe and America; of Iceland, Lapland, Siberia, and Greenland. They live among the mountains, from whence they wander on all sides in search of prey. It is rare that these Falcons quit their sterile homes, and come as far as the south of Sweden; and still less frequently do they visit North Germany, and then only in autumn or winter.

All Falcons are perfect specimens of nobility, but the Iceland and Greenland birds bear off the palm from amongst the entire family. One cannot help admiring these bold, noble creatures: the expanse of heaven is their home, the chase their pleasure; their life is one long battle, full of exertion, and yet surpassingly beautiful. With the exception of man they have no enemy; but are, on the contrary, the terror of all the weaker birds. The tame Falcon feels in no way oppressed by the hand of its master, though it looks upon itself as the queen of the feathered throng, the mighty Eagle not excepted. The rugged mountain is its home, the rocky pinnacle its point of observation; it seeks out the highest situation, looking down on everything in the low-land. In it, nobility and rapacity are most happily blended; in short, it is a perfect creation: a single glance tells you that it is possessed of courage, power, and activity. It ranges rapidly, ascending like an arrow to any height it likes, or plunges like a flash of lightning into the depths below, so that the human eye can scarce follow its movements: it is strong, audacious, active, and untiring; and yet, with all this, so tractable and capable of instruction, that it takes but little time for man to render the bird entirely subservient to him. It is a matter of astonishment to anyone who may have the opportunity of seeing a well-trained Falcon pursuing the business which it has been taught, to think that not long before, this bird was flying perfectly independent amid its native fastnesses,—I may say its own domain: now, at the word of command, it leaves its master's gloved hand, and rushes forth like a flash of lightning to strike the quarry which the latter has selected for it to pursue, receiving with gratification—aye, almost with tenderness!—a trifling reward for its work at the hand of its owner. No creature that is not essentially noble in its nature, can ever be trained to become so useful to man.

In its natural state, the Jer Falcon, like its cousins, subsists entirely on such prey as it kills for itself, principally birds, despising any food which it has not won for itself. All members of the Partridge and Pigeon families are tit-bits in its eyes, though the hare has good cause to look on the Falcon as a deadly enemy. It is rare that the quarry escapes, and then only succeeds in so doing by diving, if a water-bird, or beating a precipitate retreat into some hole or crevice, if on land. A bird singled out from a flock is lost, for no bird of prey strikes hap-hazard amongst the crowd. The Falcon will follow tame Pigeons and other birds into the very villages—water-fowl to the surface of the lake itself—mountain game, over hill and dale, through woods and passes, following with rapid pinions, at times swift as an arrow, and never deviating for an instant from the object of its pursuit. No living creature escapes its piercing glance. No sooner does its quarry move, than down it rushes with outspread talons to strike the fatal blow. The powerful and artful Raven, even, falls a prey to its indomitable pluck and perseverance. Thus it would be the most destructive of all northern birds, were there not such a superabundance of bird-life in those regions. In its wild state man does not look upon it with favour, especially during the breeding season. The Falcon is always careful to select for its eyrie some crag which it knows will, later on, be covered with thousands of breeding rock-fowl, amongst whom it determines to take up its abode.

The Falcon-catchers of old were better acquainted with the eyrie than we are, and Faber is the first to give us information on this head. "I only once came across the nest of the Jer Falcon, and that on the 6th July, 1821, in the south-western part of Iceland, about half a mile from the sea: it was large and flat, and placed on the upper part of an inaccessible precipice. There were three young ones, all full grown, two of which had already left the nest, and were sitting perched close by. The old birds circled screaming so close round my head that I was able to shoot them; they did not, however, strike at me, as do the Terns and Skuas. Both the young one in the nest, and the two sitting outside, were amply provided with a store of dead Guillemots, Razorbills, and Gulls."

The Norwegian merchant, Nordvi, an observant naturalist, informed me that the Jer Falcon prefers using an old Raven's nest, if such can be conveniently found. Others tell us that the nest is composed of dry sticks and twigs: the eggs are laid about the beginning of June, and are three or four in number; they are strong in the shell and shining, larger and rounder than a Hen's egg; the ground colour is either brownish yellow or reddish, closely spotted with small spots of a darker hue; the whole forming a beautiful design. It is singular that these birds, usually so bold, who, according to Faber, are so fond of their young, should not have attacked that naturalist.

In olden times, several ships used to sail from Denmark every year to Iceland, and other northern countries, for the express purpose of procuring Falcons; and even at the commencement of this century the Danish government used to send at least one ship a year to obtain some of these birds, which it was customary at that time to send as presents to the King of Barbary. The Danes and Icelanders of to-day, even, still send Jer Falcons by every ship bound from Reykiavik to Copenhagen.

Nestlings, or birds of a year old, are preferred for hawking purposes. Four things are necessary for the successful training of a wild Falcon for the chase: expert treatment and patience on the part of the falconer, and hunger and want of rest on the side of the pupil. These two means of coercion, however, must be used with great circumspection and care, and it is absolutely requisite that the falconer should be thoroughly acquainted with the peculiarities of each species, or otherwise he may easily make a mistake in the means he adopts for the taming and training of his pupil.

The captured Falcon is first "hooded," then the short "jesses" are fastened on the "arms," and connected by a swivel to the long "jesses;" at the same time the Hawk's bells are also attached to the "arms." Now the hooded Falcon is left quietly to itself until the next day, when the trainer seeks to place it on his fist, which is protected by a thick gauntlet; it is then carried about in the open air for several hours, so as to accustom it to remain quiet on the fist; after which the hood is removed if the pupil remains quiet, and it is spoken to in a caressing tone, the syllable used being generally, "Io, io:" should it prove unruly it is "hooded" afresh, and placed on a pole, to which the "jesses" are attached. The Falcon remains hooded while being fed, and is coaxed and spoken to the while, the food being placed in its claws or "pounces." On the third day the hood is again removed, and the Falcon placed on the fist, where it is fed, care being always taken to speak kindly to it: the food is usually either a Pigeon or a Partridge. If it takes to feeding on the hand, much has been attained; if, on the contrary, it refuses food, it is again hooded, and placed on the pole as before. Some Falcons refuse to feed on the fist for three or four days, though Jer and Iceland Falcons take much less time. Fear of man is the principal cause of obstinacy in this matter; thus the great thing is to accustom the bird to man's presence. The real training or "manning" can only be commenced after the Falcon has learnt to know its master, and is carried out in the following manner. After the Falcon has been carried unhooded on the fist for some hours, it is placed on a perch in a room, the long "jesses" still remaining attached to the glove; the food is then taken, and the bird invited in friendly tones to feed from the fist: if it responds, it receives its food, and the lesson is repeated until the falconer succeeds in making the Falcon come to call from a considerable distance. The same course is now pursued out of doors, and the long "jesses" are lengthened by a string, until the Falcon will fly some thirty or forty paces to meet its master: this treatment is then persevered in at increasing distances, until the bird becomes thoroughly accustomed to receiving its food on the hand of the falconer; the line is now abandoned; the Falcon, however, is never fed but on the fist. The next thing to be done, and one which is accompanied with some difficulty with an obstinate bird, is to accustom it to horses and hounds. Obstinacy is generally overcome by starvation and want of sleep: the bird is kept awake for two days and nights, and is only fed as much as is absolutely necessary during that time.

For hawking winged game, a Falcon is most readily trained by flying it in company with another bird, of the same kind, thoroughly used to the chase: without such an assistant the final training will require much care and patience. The falconer must procure young Herons from the nest, feed and tame them, and then attach one to a long line, like the Falcon, letting both fly, until the latter shows its natural disposition, and strikes at the Heron. As soon as the Heron is caught the Falcon must be hooded, and the Heron in its talons is immediately exchanged for a tame Hen, while the leg of a Fowl is given to it to eat, so as to make it think it is feeding on the quarry it has just struck. The neck of the Heron must be well covered with thin sheep-skin, so as to preserve it from the talons of the Falcon. In an emergency a dead Heron may be used for training, by tying it to a string and swinging round and round in the air. To train a Falcon to fly at Kites and Harriers, a dead Hen is tied to the legs of the latter, and they are turned adrift when the Falcon is cast off. The training we have spoken of must, however, be carried out on horseback, so that the falconer may be instantly on the spot when the Falcon descends with its quarry. Such are the principal points to be attended to in training Falcons.

At the present day, the sport of falconry is unfortunately at a discount, except in some few localities, and there are but few people who have ever been eye-witnesses of that magnificent sight,—a Falcon fighting mid-air with a Heron. According to Lenz, there are only four places in England, France, and Holland, where hawking is indulged in. In Northern Africa and Persia this sport is still common. In Africa every Bedouin Sheik has his Falcons. These splendid birds are so well trained that they will strike a gazelle, and, by fastening on its head and beating their wings, the quarry becomes so confused that the hounds have time to get up and pull down the game. It is said that, in Persia, Falcons are flown at foxes and wild boars. These birds are held in the same estimation in the East that they used to be with us; and any eastern thorough-going lover of the chase would not hesitate to exchange one of his wives for a Falcon!

CHAPTER VI.

THE SPARROWHAWK
(*Nisus communis*).

> " Sometimes the Linnet piped his song:
> Sometimes the Throstle whistled strong:
> Sometimes the Sparrowhawk, wheel'd along,
> Hush'd all the groves from fear of wrong."
>
> TENNYSON.

FALCONS and Sparrowhawks are as different in their natures as an honest man from a scoundrel. After our description of the Falcon it is almost obligatory to describe the Sparrowhawk, in order to show the contrast which exists between them. The Sparrowhawk is also a bold, courageous, and active bird, though it possesses none of that nobility which is so prominent a characteristic in the true Falcons: it is a low, impudent, sneaking, cunning rascal,—a regular footpad among birds. The Goshawk alone resembles it in form and character; otherwise it stands pretty well alone in its iniquity, for there is hardly any other bird of prey which equals it in deceit, boldness, and thievish propensities.*

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* We can scarcely agree with this, nor do we think would any ornithologist who has watched the habits of Kites. "We have known one of the latter," says our friend Mr. T. W. Blanford, "snatch meat from a man's hand, and food from a dish out of which a dog was feeding. In Calcutta, and other Eastern cities, it is by no means uncommon for Kites to carry off meat from the basket on a man's head.' Nothing that we know of the Sparrowhawk inclines us to believe it capable of similar boldness in thievish exploits.—*W. J.*

In Europe we have but one representative of the family, though in other parts of the globe there are a good many allied species. The principal bodily characteristics of the Sparrowhawk are the short wings and long tail, small head, long tarsi, feet and talons, dark plumage on the upper parts, light-coloured breast and belly, transversely streaked with wavy lines of a darker tinge. Male and female are easily distinguished by their difference in size, and young and old birds by the plumage.

The Sparrowhawk is a native of the greater portion of Europe: it is found everywhere where fields and woods abound; it delights in low woodland scrub and bushy copses, though it does not frequent them permanently. A true vagabond, it has no fixed home, and, except at the breeding time, roams far and near, a terror to all small birds, which it destroys, as well as to those larger species, which—unable to defend themselves, and yet too large for it to master entirely—it worries and frightens as much as it can. In March and September it undertakes long journeys, which might almost be called migrations, inasmuch as, according to my own observation, it wanders as far as Spain, Greece, Egypt, aye, even into Nūbia. It is only during the breeding season in May, June, and July, that it takes up a fixed residence; as soon as that season is over, away it starts again. The male would appear to be commoner than the female; it is much more delicately formed, and goes further south than the latter. The Sparrowhawk roosts in woods, preferring those in which the trees are of a moderate height and stand close together, for it loves concealment, and always seeks to hide itself, and that more on account of its prey than its enemies. If you would wish to become thoroughly acquainted with it, you must watch it when in pursuit of its quarry. This Hawk feeds principally on harmless and useful birds, such as Buntings, Sparrows, Finches, Starlings and Thrushes, Warblers and others; it rarely devours mice, and still less frequently insects. It catches birds whether sitting or on the wing, seizing them from above, below, or sideways, just as opportunity offers; it prefers hunting in the neighbourhood of bushes and gardens. It flies with the speed of an arrow, and, to avoid being seen too soon, skims either along the ground or close to bushes, or under cover of a hedge, until it reaches the spot where it expects to find a bird, when it suddenly rises, and darts like lightning amongst the terrified flock. It rarely fails to make a capture, and flies off with it so quickly as almost to elude observation. It will fly, without stopping, round corners, through bushes, gullies and thickets, with unexampled address, even through the streets of a village, or round the corners of a barn or stable, so as to surprise its quarry; and with all this, it is so bold and impudent as not to abandon the chase, even if the bird it is following seeks refuge with man, for it will go so far as to fly after a tame bird into a house, through windows and skylights, and it will sometimes dash with such violence against a thick glass window, as to stun itself. The size of a bird is the only thing that saves it from pursuit, though a Sparrowhawk has been seen to seize on birds which it could not overpower. Naumann has, on several occasions, seen a Sparrowhawk strike at a Hen; and he once saw one seize a Heron, which it would probably have succeeded in killing had not that naturalist arrived and chased the Hawk away. Its love of slaughter is greater even than its appetite. Lenz relates a curious anecdote of this fact: he received one of these birds, which had followed a Yellowhammer with such impetuosity into a thicket of thorns, that it became entangled, and was caught itself. "As soon as I had the bird, I tied the ends of its wings together, and placed it in a room, in which there were eleven people, whom it regarded with flashing eyes. I then went and brought six young sparrows, one of which I let go; this it immediately seized and strangled in its claws, and remained motionless looking at the company, crushing its prey in its talons. As it would not feed we left the room; and on returning ten minutes after, the Sparrow was devoured. The same scene was twice repeated, and with similar results. The fourth Sparrow, however, was only half eaten when we returned; still the Hawk seized the remaining two with the same greedy ferocity, though it could not devour them, its crop being full." The same naturalist relates another anecdote, as proof of this love of slaughter. "In October, 1844, at the village of Tabarz, not far from Schnepfenthal, a cage containing a Goldfinch hung in a room; the bird could not be seen from outside, but the reflection was visible in the looking-glass. The window was closed, and a woman was sitting in the room, when a Sparrowhawk suddenly dashed with the greatest violence at the looking-glass, but coming in violent contact with the window, which lay between it and the object of its attack, it smashed the pane, and fell stunned in the room. The would-be robber was seized; it recovered, and was kept alive for some time, but was finally killed." This bird may be said to be, in the fullest sense of the word, perfectly blind in its rage. My father had a female Sparrowhawk given him, which had been caught with its prey, a Jay, in a wood. The Jay had defended itself with determination, and the Hawk was so intent on its prey that in its rage it allowed itself to be seized with the hand, without perceiving the approach of its captor. Numbers of similar anecdotes may be related, for almost everyone who has observed this bird has some story of the sort to tell. It may be here remarked, that it is the female that conducts itself with such suicidal violence; the male is much more cautious, and far less rapacious.

It is not a matter of astonishment that all small birds should look upon the Sparrowhawk as their greatest enemy, and fear it more than any other bird of prey. Its appearance sets them in the direst distress, and even, as Naumann says, drives Sparrows into mouse holes. The thickest of bushes is the only place where they can gain refuge from the deadly grasp of its cruel talons; should this bush be too far off they are inevitably lost. The Swallow, even, scarcely dares to mob this bold, unscrupulous robber; and all other birds fly its presence as soon as it appears. Many birds save themselves by squatting close to the ground, and are thus passed unseen by it, though sometimes even this expedient fails them, and they fall a prey. Sometimes, however, it experiences great difficulty in overcoming its quarry. An instance has been known where a Goshawk has been killed by a Barn-door Fowl by repeated blows from its beak and spurs; and several others, where the Sparrowhawk has fared no better. Lenz relates the following story. "In the neighbourhood of the Hanoverian forester's house, called Sondermühlen, a Sparrowhawk dashed suddenly amongst a troup of Jays, seized one, and fell with it to the ground; they fought savagely together, while the remainder of the flock took part with loud cries in the combat, and by blows of their beaks in some measure hindered the hawk in its operations. The noise at last attracted the attention of a passing labourer, who managed to seize the Sparrowhawk; not, however, before the Jay had been killed.''

In April the Sparrowhawks retire to the larger woods to breed, especially in the thickets. It is rare that the nest is placed at any great height from the ground, it being generally situated on the top of a fir-tree of moderate height. The nest is composed of dry twigs, and lined inside with moss and hair; an old Crow's nest is often used as a foundation. The eggs, from three or four, to sometimes six and even seven in number, are of a greenish white, spotted or blotched with yellowish or reddish brown. The female sits closely for three weeks, during which time she is fed by the male. Both the parent birds are really foolhardy in the boldness they display when their brood is in danger, and will defend their young, even against man, with the greatest courage. The striking difference in size between the male and female is visible in the young birds, only a few days after they are hatched. As with all birds of prey, they are at first covered with woolly down, but soon get their first feathers. During the breeding season the Sparrowhawk is a regular scourge to all small animals, on account of the young requiring a great amount of nourishment. Small birds, mice, and sometimes insects, form their food until able to fly.

The use of the Sparrowhawk to man is entirely confined to its capacity for being trained for hawking purposes, while the damage it inflicts is immeasurable. This bird thoroughly understands the art of devastating a whole district or beat, scarcely leaving a single pair of songsters in the land of the living. Inasmuch as it does little else but destroy those birds which are useful, it behoves us to exterminate it whenever we can. The Sparrowhawk calls for the most persistent persecution, especially as by its craftiness it so often baffles pursuit. This Hawk is best caught in a trap, baited with a Sparrow or other small bird. It is also sometimes captured in the clap-net, owing to its overwhelming greed in striking at the decoy-birds. It is easily shot in the woods when flying to roost; otherwise it is ever shy and cautious, and seems well aware that man is its bitterest enemy.

CHAPTER VII.

THE EAGLE OWL

(*Bubo maximus*).

> "Grave creature!—whether, while the moon shines bright
> On thy wings opened wide for smoothest flight,
> Thou art discovered in a roofless tower,
> Rising from what may once have been a lady's bower;
> Or spied where thou sitt'st moping in thy mew
> At the dim centre of churchyard yew;
> Or, from a rifted crag or ivy tod
> Deep in a forest, thy secure abode,
> Thou giv'st, for pastime's sake, by shriek or shout,
> A puzzling notice of thy whereabout—
> May the night never come, nor day be seen,
> When I shall scorn thy voice, or mock thy mien!"
>
> WORDSWORTH.

THE dark, dreary nights of our latitudes are aptly represented by that wild, nocturnal hunter—the Eagle Owl. It is gloomy, sullen, and spiteful in disposition, more so perhaps than any other bird, and may thus justly be regarded as typical of our night. Owls of all sorts are to be met with both in the north and in the south, but no other species is so odious as the Eagle Owl, or such of its relations as exist under similar circumstances in other portions of the globe. As we have before remarked, it is a perfect contradiction to the rest of the bird world, so remarkable for its joyousness. Ever dull, miserable, savage, and ill-tempered, without either rhyme or reason; it is in every way the exact opposite of the diurnal bird of prey, though both plunder and murder alike; still there is a great difference in the ways and means adopted by the two.

The Eagle Owl is the largest of all known Owls: it is two feet long, and six feet in expanse of wing, and probably owes its title of Gross Herzog—Grand Duke—to its great size; in Germany this appellation is used as a nickname, though *Grand Duc* is the common name used in France. We Germans, as also the Spaniards and Arabs, have given this bird names which have its call for their origin, such as Ouhoo, Boohoo, Schoohoo, Booh, Huo, Hoob, Hiroo, Schoobnt, Schoofoot, and Hoohoui, and occasionally Auf or Gaauf. The Arabs call it Boohme; the Spaniards, Boohoo; and the Italians, Gufo. All these names are echoes of its cry, which rings so weird and ghost-like through the midnight air, and has in some way caused the bird to be looked upon as playing an important part in the legends of the "wild chase."

Our bird prefers the rocky and mountainous forests to those of the plains: the more wild and solitary the forest, the deeper the glen, and the steeper the precipice, the better is it pleased. The Eagle Owl is fond of ancient ruins, castles, and monasteries, whose walls afford suitable crevices and niches wherein to hide: one is sure to meet with it in highland woods and forests, or amongst large precipitous rocks. At Jativa, in Spain, I shot a young bird on a rocky precipice, where the nest was placed: this species appeared to be a regular inhabitant of the turrets of the Alhambra, at any rate, it has been for centuries the subject of many a legend in those parts. It is a non-migrating bird, only making short journeys, or trips, in the autumn, especially when the snow lies deep in the high lands.

The Eagle Owl is somewhat fantastic in appearance, usually sitting with its feathers so much ruffled as to make it seem much larger than it really is. "In that large, shapeless mass of feathers," says Naumann, "one can scarcely distinguish the limbs: the half-closed eyes hide their glorious rays; suddenly it opens them wide, bends the head and upper part of the body forwards, swaying from side to side, and, raising first one foot and then the other, begins to tremble, winks slowly with the eyelids, spits like a cat, and snaps its bill; when angry, its eyes flash fire, it bends forward with hanging wings, ruffles its plumage as much as possible, and, snapping and hissing, dashes furiously at the enemy."

This bird seems less courageous, than surly and quarrelsome, and yet it is asserted that it will fight to the death with the Golden Eagle, when attacked by the latter. The Eagle Owl is a powerful bird, and there are no bounds to its fury; it is but rarely that anything escapes from its grasp. Though strictly nocturnal in its habits it always keeps a good look out for its own safety in the daytime, and is ever shy and cautious. Keen of sight and hearing, it takes wing while the danger is still far off. Like other Owls, this bird is fond of pressing itself against the stem of a tree, with unruffled feathers, so as to closely imitate the stump of a tree, and thus escape observation. Inasmuch as deep clefts in the rocks, or the thickest of trees, are its usual retreats, the Owl is often passed over, which fact is undoubtedly an advantage, for the day birds mob it whenever they see it. They may possibly have made it the savage, spiteful bird it is, inasmuch as their system of constant irritation would be sufficient to try the temper of the mildest individual. Thus nothing remains for the Owl but to evade its disturbers, and hide itself as long as possible; but woe betide it if discovered, for then the friends of daylight treat it to a "charivari" without equal.

The first to arrive on the scene is the ubiquitous Crow, conducted thither by some inquisitive warbler who has discovered the enemy's retreat. The Crow thoroughly understands what the little fellow means, and hastens to convince itself of the truth of the information. Having satisfied itself, it retires noiselessly, but only to carry the news to its relatives. Now they flock in from all sides to take part in the fight, with an eagerness worthy of the boldest man; greeting one another with hoarse and scornful croaks, the sooty tribe hasten as fast as they can to the scene of action. The mockers surround the poor old "Grand Duke," first at a respectful distance, though they are fully determined effectively to disturb its siesta. There sits the Owl, rolling its eyes, spitting, snapping its beak and ruffling its feathers, now hopping from one leg to another, now raising and lowering its feathered horns by turns; mad with rage, bemoaning its fate, and at loggerheads with the whole world, it awaits the turn that matters may take; at the same time, be it remembered, every Crow takes good care not to lay hold of the irritated gentleman; nothing less than a Raven dares to rely on its own strength: one of these, however, will run a tilt at the dark knight, using its sharp beak as a lance; but before the latter has time to raise the terrible claw, the Raven makes good its retreat, prepares for another rush and darts like an arrow, so as to use its weapon effectively. The Owl now loses the last remnant of patience, and seeks safety in flight. Oh, unlucky wight!

this is all the black swarm has been waiting for, the Crows being far its superiors on the wing. Giving vent to exulting cries, they dart down from above with such unerring aim and force as to scatter the poor brute's feathers in clouds to the winds: they rise again with a mighty noise, that heeds no secrecy, as though they sought to proclaim to the world at large, all the fell deeds committed by this Prince of Darkness, while other knights advance to battle. All Hawks and Falcons, aye, the proud Eagle even, answer to the call, and hasten to take part in the fray. Now the Owl must, perforce, either beat a hasty retreat or remain on the field. In any case, however, the Owl is thoroughly worried, and sometimes really damaged, before it finds refuge in some thick tree or rocky cleft, where it hides itself as closely and silently as its rage will permit, until quit of the Crows.

The detestation in which the Eagle Owl is held by all diurnal birds is not ill founded, for this bird preys on every living creature it can overcome, assassinating them in the most abominable manner while they are asleep. Its quarry is as follows:—fawns of the roe deer, hares, rabbits, hamsters, rats, moles, mice, Capercaillie, Blackgame, Hazel Hens, Pheasants, Partridges, Rooks, Jays, Magpies, snakes, lizards, and frogs; Rooks seem to be its favourite morsel. No wonder, then, that they pay their enemy out if they can only see an opportunity. It assassinates them; they attack it in open day. The Eagle Owl generally breaks the spine of the smaller animals close to the head, and, cracking the remaining bones, devours its prey skin and all; the heads of the larger birds it pulls off, as also the feathers, and then tears away the flesh in large pieces, which it swallows: it, however, always devours a portion of the hair, feathers, or scales, as well, and wastes away if fed on flesh alone. The indigestible portions of the meal are thrown up in large round pellets or "casts." With larger animals it lays open the skin of the belly, and eats out the flesh from inside; if it finds that there is too much for one meal it carefully replaces the skin, and hides the remainder in some dark cranny or corner until required again. This Owl drinks rarely, slaking its thirst generally with the blood of its victims. If food is plentiful it gorges itself, but in times of dearth it can go without food for weeks together.

By the last fortnight in March the Eagle Owls commence preparations for breeding; at this season may be heard their hollow, muffled cry of "poohoo, poohoo," which is distinguishable at a great distance through the woods, and it is not to be wondered that the timid are frightened at it. In the silent, dark recesses of the mountain forest a variety of noises, well calculated to make one's flesh creep, fall upon the ear: the shrill, mocking laugh; a sound as of snarling hounds; the whoop of the hunter; the snorting of horses; these are all calculated to impress the uneducated and superstitious with the truth of the legend of the wild huntsman. Even to the ear of the better informed these hideous cries, the loud screech of the female, or the "poohoo" of the male, intermingled with snapping of the beak, and curious miaulings, sound somewhat weird, and the boldest of mortals can scarcely repress a cold shudder when a company of these forest spirits favour him with one of their demoniacal nocturnal concerts. Doubtless these sounds represent the battle cries of the males when fighting for the female, and take the place of the song of the Nightingale when telling its tale of love.

After the Owls have paired these cries are heard less frequently: both birds being now fully occupied with their nursery preparations. The large nest is composed outwardly of branches and sticks, and is lined with dry leaves and small twigs; it is ill built, and generally placed in either the cleft of a rock or in a hole in some ruined tower. The nest is never built in a tree but from necessity. The two or three eggs are also often found lying on the bare surface of the rock, without any nest whatever: they are round, coarse-grained and white, and somewhat larger than a Hen's egg. The young are hatched in about three weeks: they are usually two in number, rarely three; they look, on their first appearance, like balls of cotton-wool, and keep up a continual hissing or shrill whistle; they remain a long time in the nest, and are so abundantly provided with food by the parent birds that one is sure to find a large heap of provisions at the nest. The Owlets often betray their presence to their innumerable enemies by their cries, and suffer much persecution in consequence. When about eight weeks old they are able to fly, though they still remain for some time longer under the care of the old birds; these latter rarely wander far from a particular neighbourhood, and usually build in the very same place the following year.

Young Eagle Owls, being in great requisition as decoys for catching other birds, are taken from the nest, and, be it said, at some risk of life and limb, as the old birds will not unfrequently attack the depredator; and he need be bold, indeed, who is indifferent to the anger of these savage birds. It is rare that the Eagle Owl can be approached close enough to afford an opportunity of killing it with a shot-gun, even at night; it is ever cautious. Most sportsmen, indeed, preserve any pair of these birds which may chance to breed in their neighbourhood, in spite of the mischief they do, on account of the young, which are so much sought after, and fetch high prices.

The young are easily reared, and are, to a certain degree, even capable of being tamed. I once saw an Eagle Owl, in Stockholm, which was one of the best-tempered creatures under the sun, and would allow its keeper to stroke it, would answer, and come to his call. It was allowed to go free in the courtyard, and would fly on to the neighbouring roofs, always returning, however, to its cage again; in short, it behaved in a manner for which one would not have given it credit. Eagle Owls have also been known to breed in confinement on several occasions.

With us the Eagle Owl is kept in confinement for the purpose of being used as a decoy at the "Krähenhütte" (literally, Crow's hut). To indulge in this sport it is necessary to build a small hut on the top of any hill or mound which may be favourably situated: it must be about twelve feet in diameter, and sunk in the earth, so as to be almost flush with the surface, the roof being covered with turf. This hut is provided with several loopholes, which slope downwards from the inside, like those used for musketry; the door is made as small as possible. At about fifteen paces from the hut a small hillock of turf is raised; on this is a perch, and upon it the Owl is placed; right and left of the bird large dead boughs are planted, or even live trees. Now, when the migratory season arrives the sportsman comes before sunrise to the hut, accompanied by his tame Owl, whose claws have been filed; the King of the Night is then chained to his perch, and the hunter hides in the hut. After a short time his attention is attracted by the curious movements of the Owl, who rolls its eyes from side to side; this is the sign that the enemy is at hand. One soon learns to distinguish whether the birds flying overhead are Hawks or Crows; the latter, being of course more common, appear in larger numbers. Anyhow one may rest assured that all birds of prey, Crows, Rooks, &c., which may be passing that way, will most certainly stop to indulge in their common hatred of the Eagle Owl. Rooks dash at the bird with blind rage. Many birds of prey, however, content themselves with circling for a time in the air above their enemy, while it, with ruffled plumage, keeps turning and twisting about, snapping and hissing, beating its wings, and going through a variety of antics, as though it were determined to dislocate all its limbs in its efforts to avoid, as much as possible, the attacks of its diurnal enemies. In this manner the sportsman is enabled to shoot such birds as may arrive from under cover of his hiding-place. This sport affords much amusement.

CHAPTER VIII.

THE NIGHTJAR, OR FERN OWL
(*Caprimulgus punctatus*).

> " 'Tis spent—this burning day of June!
> Soft darkness o'er its latest gleams is stealing;
> The buzzing Dor-Hawk, round and round, is wheeling,—
> That solitary bird
> Is all that can be heard
> In silence deeper far than that of deepest noon!"
> WORDSWORTH.

IN my night wanderings in Africa I usually rode peering carefully amongst the sparsely-scattered mimosa, or other trees and scrub, which lay in my road, trying to observe this night bird,—a friend of my childhood, which, on those occasions, was more especially dear to me as I roamed a stranger in the land. It is true that the bird was not the same species which won my affection in the "Fatherland," but rather some one or other member of its numerous family; still they were all valued in my eyes. It was far less for their tender beauty, grace, or song, for which gifts we admire birds so much, and which attach us to them, than for the pleasure of seeking to become intimate, if I may so express it, with the most singular fellow of the whole class.

The bird of which I now write bears many names, such as Nightjar, Nighthawk, Nightchur, Fern Owl, Goatsucker, Dor-hawk. The Spaniards call this bird the "Shepherd's deceiver," "Father of the wind," and "Big-mouth," while other nations accord it similar titles. From this it may be gathered that we have to do with a curious and singular creature, which indeed it is, both as regards shape and make, and especially habits and mode of life. The Goatsucker is a Swallow among the nocturnal birds, and similarly constructed to its diurnal cousin. The body is furnished with plumage resembling in texture that of the Owls; the colouring of the same is dusky, and of innumerable different shades, the marking of which is so delicate as only to be appreciated when closely examined. At a distance the bird bears a wonderful resemblance to a piece of dead bark, spotted and blotched with greenish gray. The broad, flat head is furnished with a tiny beak, though the gape is enormous; the latter is bordered with hairs or bristles. The feet are small and weak, indeed almost fragile. The wings and tail, however, are remarkably large, and often singularly developed.

Europe possesses only two species of Goatsucker, one of which ranges from Central Spain to Norway, and is also found in Siberia, as well as during migration all over Northern Africa. The second species appears to be limited to the south of Spain. Our kind is a woodland bird, or is, at least, found where trees abound: it appears to prefer pine forests to others, but is fastidious in its choice of a locality, inasmuch as it must be an open one, and abound in glades or clearings, for this bird to take up its abode there. Here it passes the whole summer, leading a still, quiet life, chequered, it is true, by an occasional flight with a neighbour. Except when it is on the wing one rarely happens to discover the Goatsucker, for it is easily overlooked by the sharpest eye. The bird lies motionless and closely crouched to the ground, or on an old moss-covered bank or tree, never sitting on the latter crosswise, as other birds do, but always in the same direction as the branch, and its plumage so much resembles the bark in colouring that one can scarcely tell the difference between bird and branch. Besides this, the creature is too cunning, even on seeing an enemy, to betray itself by the slightest movement, and rather than take wing it, on the contrary, presses itself closer to the ground or tree, where it will remain blinking with half-closed eyes, until imminent danger forces it to take wing. If flushed it flies with rapid and apparently uncertain flight to the nearest hiding-place, generally a thicket, where it ensconces itself so closely as only to be found again with great difficulty, or perhaps not at all. Its gait can scarcely be called walking, but rather a tripping kind of run, accomplished with much difficulty; it is a mode of locomotion which the bird never makes use of but to reach the nearest bush, under which it wishes to repose. This bird is so conscious of the protection afforded it by the admirable adaptation of the colouring of its plumage to that of the locality which it inhabits, that it always relies on this gift to hide it from observation.

At the approach of twilight it awakens into life; this I have observed both in Spain and Africa. At sundown it begins to rouse itself; stretching itself it raises a wing, perhaps preens a feather or so, half opens its eyes, blinks, crawls a few steps, and prepares itself for flight. As soon as twilight reigns, and moths and beetles begin to fly about, it takes wing lightly and noiselessly, its flight much resembling that of the Swallow: at first it skims backwards and forwards over a short space, alighting now and then to rest itself. When once darkness has set in, the flight becomes rapid and active in the extreme: now it darts in and out amongst the trees and bushes, chasing every insect that is to be seen. The Longtailed African Goatsucker (*Scotornis climacura*) afforded us endless entertainment, in Kartoum, during the lovely nights in the rainy season. This species used to come into the middle of the town, circling round the trees with a grace which fairly astonished us, and, with its long tail sweeping like a sledge behind it, quite enchanted us. In the forest and desert villages of the Soudan, this and other members of the family were so tame that they were to be seen every evening, and lent to the nights an additional charm. In the garden of the castle of Buen Retiro, in Madrid, I also saw one species carelessly hawking along the alleys and walks, sometimes darting past close before me, and at others wheeling round my head, and clearing off numbers of the troublesome mosquitoes, and even alighting fearlessly on the path close in front of me.*

The Goatsucker is very fond of perching on prominent boughs or thick-topped trees, where it will remain for a minute or so, appearing from time to time, uttering, in the pairing season, its sibillant note for a while, and then flying off again. On dark nights it rests from its labours from ten o'clock in the evening till near dawn, when it recommences hawking: when it is bright moonlight it pursues its sport unremittingly the whole night through, and while migrating it is ever on the move. Its food consists of different species of moths and beetles. With us it feeds principally on cockchaffers, dung- and fern-beetles, and gorges itself to such an extent that they can be felt from outside. Later on it hawks moths, both large and small, especially the *Bombycidæ*, as also grasshoppers, crickets, gnats, midges, &c. Sometimes it will remain hovering in the air to make sure of a prey that may be on the ground or on a blade of grass, when suddenly closing its wings it skims along close to the ground, so as to seize it to advantage, alighting sometimes for a moment, the better to accomplish its purpose. It does not trouble in the least about the scratching and tenacity of life evinced by the beetles, but swallows them alive, having nothing to fear on that score, thanks to its rapid and vigorous powers of digestion. The indigestible portions, such as wing-cases, legs, &c., it throws up in "casts" of considerable size.

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* I have on several occasions, in the high-lands of Bogos, seen Goatsuckers (*Caprimulgus inornatus*) assembled together in companies of from ten to a dozen or more, wheeling in rapid circles around and through a swarm of flying ants, just emerging from their nest, like a stream of thin blue smoke; this occurred just before night-fall: they were assisted in their insect raid by a number of Rollers of two species (*Eurystomus afer* and *Coracias abyssinica*). The scene was one of great interest, and productive of much pleasure to a lover of birds and their habits; the graceful and rapid intricacies of their flight made it seem as though the feathered band were indulging in a noiseless game of follow-my-leader. The Goatsuckers seemed to know no fear, and to remain quite undisturbed by repeated shots. I was enabled to procure half a dozen specimens with the greatest ease. While mentioning instances of insect-hawking, I may say that I have seen one of the Weaver-birds (*Ploceus æthiopicus*) hunting and catching ants under similar circumstances; the address displayed was, however, far behind that shown by the Goatsuckers and Rollers, though for all this the Weaver-birds succeeded in making a rare meal. —*W. J.*

The Goatsucker breeds but once a year, unless the first eggs happen to be taken. This bird is especially interesting to watch during the breeding season. Its courtship takes place by night, as may well be surmised, and consists principally in various *tours de force* in the way of flight, performed by the male for the gratification of the hen bird; besides these he has a peculiar ditty and call-notes, which are not heard at other seasons. The latter sounds like "häit," pronounced very softly; this is emitted by both sexes: the first is confined to the male, and is a really pleasant, purring sound, not unlike that of a cat; it somewhat resembles the syllables "errrr" and "eurrrr," and lasts without interruption for at least five or ten minutes at a time; it is produced by both expiring and inspiring, exactly as the cat does. Careful observation has led to the discovery that "eurrrr" is produced by the in-drawing of the breath, and "errrr" by the reverse process. On rare occasions the female also may be heard to make a very light purring noise. This kind of song is common to many species; I have noticed it with almost all the African ones I have met with. The Spanish bird, however, emits this sound just as little as do the American species, one of which we have already been made acquainted with under the name of its call, "Whip-poor-Will."

I cannot but regard the whirring tones of the Goatsucker as a most delightful nocturnal serenade; whenever I hear them—even now—they carry my memory back to days gone by, when—passing the night in some African forest or desert village, all around lay buried in profound rest, uninterrupted, save by the occasional howl of the hyæna or the jackal; perhaps also the cry of the leopard or dull roar of the lion giving evidence of their watchfulness—I would hear the droning of the Goatsuckers, who, gliding amongst the huts, and perching on the neighbouring bushes, unmindful of either myself or beast of prey, would purr away without ceasing, their song of satisfaction: when one left off another began; and so it went on. One night in particular I well remember, when I had lost my way, and was forced to bivouac in the open forest, surrounded by howling hyænas,—prevented by the high wind from even lighting a fire, and having to calm my terrified camel,—I saw five or six Longtailed Goatsuckers, which kept wheeling round my resting-place, and treated me with the most praiseworthy patience to their soothing song the livelong night through. I felt not a little consoled, I can assure my readers, for it made up for all my discomfort, as I well knew that the day was not far distant when I should be greeted by the warblers of the forest.

This singular song is the Goatsucker's chief weapon against its rival, though it is sometimes forced to defend itself in a more matter-of-fact manner, inasmuch as when two males are quarrelling about some fair partner they either seize each other as firmly as they can while flying, or tilt at one another for want of better means of deciding their dispute. As soon as one combatant has been put to flight the conqueror returns to his mate, and in company with her rejoices over his victory, often clapping his wings, the better to evince his satisfaction, or, alighting on a neighbouring tree, further weaves his web of love, until she is fairly vanquished by his assiduity.

These birds build no nest, but simply lay their two eggs on the bare ground in some suitable hollow, generally under a bush. The eggs which I have seen are rather long, gray in colour, smeared or spotted with a darker shade,—in this way perfectly matching the colour of the ground where they are deposited. The female sits close, and seeks in her own way to defend her nest from all intruders; whether, however, as is said of the American species already mentioned, in cases of great danger, she carries the eggs away in her mouth, is not yet known. The eggs are generally found about the beginning of June, and the young are hatched about eighteen days later. They are hideously ugly, the broad head, large eyes, and covering of gray down, render their appearance truly frightful. They are fed with insects by both the parent birds, but only in the twilight; these latter keep wheeling round the head of any enemy that may appear on the scene, in a paroxysm of terror. If there is a second brood the female usually only lays one egg.

The Goatsucker is easily disabled, and if caught napping can be killed with a pellet from the blowpipe; otherwise they are usually shot while flying about in the evening. They have a curious habit of hovering in the air, if fired at and missed, thus giving the shooter an easy opportunity for using his second barrel with effect. Be it understood that such a useful creature is never shot but by naturalists, and not often by them. This bird is only caught by the merest chance, and indeed I know no way of doing so except at the nest; any way, it would be but a useless capture, for I have as yet never met with anyone who has succeeded in rearing the young birds, or in keeping the old ones long in confinement. In spite of its utility, this bird is, however, often shot by the ignorant, on account of the divers singular names it bears.* These could only have been given it after having had the bird alive in the hand, and examined it closely. That the Spaniards call this bird the "Shepherd's deceiver" is easily accounted for, inasmuch as the shepherds are those who most often come across it, and probably once upon a time one of them was tempted to approach it cautiously and try to catch it, in which he signally failed, and was thus deceived, that is to say, if he ever thought to capture the bird while sitting, without knocking it down with either a stick or a stone. The name of "Father of wind" owes its origin to a singular way the bird has of opening its tremendous mouth when caught, and spitting like a cat. The commoner name, Goatsucker, it has also probably obtained from the size of its gape; and it is big enough, in all conscience, to lead to the idea that it sucks the teats of goats. Lastly, this bird is looked upon by the superstitious as a witch-spirit whenever it is seen. That the poor little creature can succeed in sucking any mammal is an accusation so absurd in itself as scarcely to need contradiction.

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* Besides the term Goatsucker, the Germans also call this bird by a variety of similar names, amongst which are the following:—"Goat-," "Roe-," and "Child-milker;" "Cow-" and "Milk-sucker;" "Parson;" and "Witch:" all of these are evidently epithets of abuse, and not of endearment!—*W. J.*

Besides man, the Goatsucker has many enemies:—Goshawks, Sparrowhawks, foxes, Martins, and cats; and cats often manage to catch it asleep, and still more frequently destroy the young birds. Having told you what it feeds on, I have proved it to be a useful bird, and on this account I trust that my earnest prayer for the Goatsucker's protection will not remain unanswered.

CHAPTER IX.

THE CHIMNEY SWALLOW

(*Hirundo rustica*).

"Come summer visitant, attach
To my reed-roof your nest of clay,
And let my ear your music catch
Low twittering underneath the thatch
At the gray dawn of day."

MRS. SMITH.

FROM the most remote times the Swallow has ever been associated with a friendly greeting. All nations, of whose early history we have any knowledge, make mention of this little friend of man, as being treasured by Jews, Greeks, Romans, and Arabs, one and all; by the inhabitants of northern regions, as well as those of the south; by those of the west, as well as the east. In no ancient history do we ever read of this bird being subjected to ill-treatment or persecution; and it is only the more modern nations of the south, and, be it said to their shame, some inhabitants of certain parts of Germany, who prove the exceptions to this rule. The Swallow is regarded by all as something more than earthly, whose life and existence is worthy of our interest. The arrival of these birds in the spring, and their departure in the autumn, divide the year into two halves,—one a bright, and the other a dreary one; their arrival is greeted with pleasure, and their departure with regret. The Swallow is to us what the Sacred Ibis was to the ancient Egyptians—the harbinger of the rich and fruitful season. The Swallow announces the awakening of all Nature to life and energy, after the long, joyless winter has passed away: it gives promise of better days; and when it takes its departure our hearts are all saddened, for we know that dreariness and cold must soon follow, and that with it the lovely summer days have fled. Anacreon sings its arrival and departure thus:—

"Once in each revolving year,
Gentle bird! we find thee here.
When Nature wears her summer-vest,
Thou com'st to weave thy simple nest;
But when the chilling winter lowers,
Again thou seek'st the genial bowers
Of Memphis, or the shores of Nile,
Where sunny hours of verdure smile."

Moore's *Translation Ode* 24.

The more modern poets do not prize it less, and, like the ancients, look upon it as a bird of promise:—

"This guest of summer,
The temple-haunting martlet, doth approve
By his loved mansionry, that the heaven's breath
Smells wooingly here: no jutty, frieze,
Buttress nor coigne of vantage, but this bird
Hath made his pendant bed, and procreant cradle:
Where they most breed and haunt, I have observed,
The air is delicate."

Macbeth, Act I. Sc. 6.

Thus says Shakespeare, and our German authors have sung the Swallow's praises in innumerable poems. Such universal regard, so great a love as this, cannot assuredly emanate from chance alone, but has a deep meaning, some real foundation. The latter we cannot avoid recognizing, after having examined the habits and mode of life of this much-loved bird.

Of the six different species of the Swallow family, which are natives of Europe, the Common, or Chimney Swallow is the one held in the highest esteem. This is a well known, pretty, joyous creature, with a forked tail, long wings, and metallic blackish-blue back; the breast is rusty-yellow; the forehead and throat a rich chestnut: this species builds its nest inside farm-buildings, chimneys, &c.; it is open at the top. The Swallow is a summer guest in and about the homesteads of Central and Southern Europe; it shares the dwellings of the natives of Central Asia; and in its migrations is a visitant to all the countries of Southern Asia, or penetrates into the very centre of Africa. I met with it in 12° north of the equator, where it was still in the act of migrating and pushing further south, passing some five or six other members of the same family, which were permanent residents. The Chimney Swallow usually reaches us about the beginning of April, and then only singly, the main body following these pioneers somewhat later, when the warm weather has regularly set in; hence the old proverb,—"One Swallow does not make a summer." Soon after the arrival they take up their residence in the vicinity of man's abode, and, seeking out the old nest of the previous year, gladden the hearts of both old and young.

The Swallow is the type of innocent joy and of perfect confidence, ignoring sadness and distrust; besides this it is clean, neat, quick, active, fond of sport, and bold. Its flight is very beautiful, rapid, mobile, and active in the extreme, equalled by but few other birds. It swims, so to speak, through the air, gliding either straight ahead or twisting this way and that, turning corners with the greatest address and nicety, darting even through small holes; now it sweeps in short curves to the ground or surface of the water, or may be seen almost lost amongst the clouds; it turns summersaults in the air; in short, there is not a trick of flight of which it is not master: its powers in this accomplishment are unbounded, and, curiously enough, it performs every function of life while on the wing. It is when flying that it collects its food, which consists of small insects of every conceivable sort:—flies, gnats, gadflies, mosquitoes, midges, moths, small butterflies, and beetles. It bathes while flying, skimming along the glassy pool, dipping in the water as it passes, and shaking the pearl-drops from its wings. It sports and sings while on the wing, though it may also often be seen perched on some conspicuous spot, either sunning itself, resting, or singing. The song is simple; a rapid twittering, which is, however, in the highest degree charming and soothing.

In the early morning, at break of day, the Swallow is the first bird astir about the farm. "Scarcely does the thin gray streak of dawn announce the coming day," says Naumann, "than one hears the prelude song of the male Swallow, who has just awakened from his slumbers. All the other feathered denizens of the farm are still fast asleep, and every object is enveloped with a halo of misty gray, when one hears the 'vierp, värp,' of the Swallow, still uncertain and disconnected, but by degrees it becomes more continuous, till at last it forms a song, which is repeated several times from the spot where the bird is perched before it takes wing. A quarter of an hour has now passed, and other members of the sleepy band have shaken off their slumbers. The Redstart begins its morning song from the nearest roof, the Sparrows announce their presence, the Pigeons coo, and before long every bird is awake. Whoever has been accustomed to partake of the enjoyments of the bright summer mornings at some country farm must agree with me that the Swallow with its simple, though joyous song, contributes in no small way to the pleasure of that hour."

The Swallow is no sooner wide awake than off it starts hunting after insects. When the weather is fine it generally flies high, and when it is damp usually skims close along the ground or over the water, owing to the insects being governed by much the same rules. The Swallow will follow herds of cattle for miles, and horsemen for long distances. It is a bad time for them when there has been a succession of wet days, inasmuch as all the insects have got out of the way. They then anxiously skirt every bush, or hawk close round the houses, to hunt up something on which to make a meal; they suffer considerably from want of food. It is only in such weather that the Swallow can be sad; on bright, sunny days it is ever cheerful, and sports with its companions the livelong day. This bird shows its courage directly any enemy appears in the field. As soon as these birds catch sight of the intruder they circle rapidly round it, repeating their challenge-cry, "bevist!" thus giving other birds ample warning, and placing them on their guard, while their battle-cry is the sign for other Swallows to take part in the fray. It is true the war is not waged with sharp weapons, yet Swallows often succeed by mobbing, in driving the enemy from the field, or calling more powerful birds to their aid. At the first signal, all the Swallows within call assemble together, and in a trice the robber, be he feathered or furred, is surrounded by a band of these courageous, sport-loving creatures, and followed and mobbed by them with loud cries, until driven out of their immediate beat. There are only two of our birds of prey who are at all able to catch these active birds, namely, the Merlin (*Falco æsalon*) and the Hobby (*F. subbuteo*). As soon, however, as either of these two Hawks appears, the Swallows are seized with a panic, and the bold challenge-cry of "bevist" is quickly changed to a terrified "devilick," while they beat a precipitate retreat. The Hawks above named are, however, only capable of making a capture, either by dashing without any warning amongst a flock of Swallows, or by hunting them in pairs; in the latter case one Hawk chases the quarry, while the other waits for an opportunity to strike. Besides these birds of prey they have other enemies, such as cats, marten-cats, weasels, and even rats, who principally limit their attention to the young brood.

The Swallow begins to build its artistic nest in the month of May: it is placed inside houses and sheds, always under shelter, and against walls or beams close to the roof; it is in the shape of a quarter of a sphere, adhering to the wall, and is constructed of sandy loam or mud, which is brought in small pieces by both the old birds from some moist spot, and is then built up intermingled with pieces of straw, hay, or long horse-hair, which serve to strengthen the edifice; the lower portion is always thicker than the top, in full accordance with the laws of gravitation; the nest is lined inside with soft materials, such as feathers, hair, pieces of wool, as well as with fine grass or hay. In sheltered localities it becomes very hard and durable; indeed Swallow's nests have been sometimes known to last upwards of twelve or fifteen years, having been used twice every year. It is true that all weaker parts are thoroughly overhauled and carefully repaired, and the whole structure put into good order. Thus in the spring the pair have little to do beyond clearing out the cobwebs and rotten lining, and to line the nest afresh: in this way it happens that those birds which find their old nests intact always lay earlier than the young birds who have a nest to build, even though these assiduous labourers manage to complete the edifice in six days. The eggs, from four to six in number, are small and white, tinged with yellow,—the colour of the yolk being seen through the semi-transparent shell; this ground is thickly spotted with reddish brown. The task of incubation is carried on solely by the female, while the male furnishes her with the necessary food, though when the weather is bad she is forced to go and forage for herself; in this way the time required for hatching out the young varies very much. When the weather is favourable twelve days are sufficient; when, however, on the contrary, it is stormy and cold, the process will often occupy some seventeen days. When first hatched the young are thinly covered with long, gray down; the beak has a very wide gape, always edged with yellow; in a few days they improve vastly in appearance, and already push their little heads above the margin of the nest. As soon as they are nearly ready to fly they may be seen happily grouped together round the edge of the nest, awaiting the arrival of the old birds, and ready to take the food immediately it appears.

A family of little Swallows is a winsome sight! The harmless, tiny creatures peep so prettily and innocently from the nest, and look so joyously out on the world before them, seeming to take such interest in what the labourers are doing in the vicinity of the nest, that one cannot help loving them. The old birds take the utmost care of their offspring, and are very particular as to cleanliness; they will catch the excreta, ejected from the nest, before it reaches the ground, and carry it out into the open air, so that even underneath the nest it is comparatively clean. After about a fortnight the young are full grown, and capable of following their parents out of doors; here they practise flying, and are instructed by the old birds in capturing their food. At first they tire after every short flight, and sit for minutes close together, all in a row, upon some prominent branch, where they rest themselves; in a very short time, however, they learn to fly as well as the old birds. For several days after they first quit the nest both old and young return to it every evening, but a fortnight after their appearance in public they are able to take care of themselves, and no longer come back to the old home. After having got rid of the first brood, the old birds make preparations for the second family, but they never lay as many eggs as on the first occasion.

Swallows are, as the whole world have rightly decided, most useful creatures, and for this reason it is iniquitous that they should be caught in some places for food. I was disgusted, when in Spain, to see boys catching these pretty creatures with a hook and feather, while at the same time I quite forgot that such bloodthirsty young rascals were to be met with in Germany itself, namely, in the neighbourhood of Halle and Vienna, where numbers of our little feathered friends are thus murdered. The tiny morsel which a Swallow furnishes is not sufficient recompense for the trouble of catching it; it, therefore, appears all the more inexcusable to make these little pets offerings to gluttony.

It is unfortunate that it is so difficult to keep these birds in a cage. A friend of mine once succeeded in keeping a white Chimney Swallow for several years: he fed it usually as one would feed a Nightingale. This, however, was quite an exception, for the little prisoners usually die very soon after their capture.

We need not wonder at the number of legends, connected with the Swallow and its habits, which we hear, even in the present day, from the mouth of the populace. For instance, the old, groundless fable still meets with credence, that Swallows do not migrate southwards, but bury themselves in the mud at the bottom of ponds and lakes, or run into burrows in the ground and hibernate there. These stories probably have their origin from the Swallows assembling in immense flocks, and roosting in large reed-beds, whence they start on their long journey during the night. I look upon it as quite unnecessary to enter into an argument upon such a silly point, but I must once more repeat my assurance that I have regularly seen and watched our Swallows in regular flocks during the season of migration, between 15° and 12° north latitude, and I have on several occasions shot one out of such a flock, so as to make sure that my observations were correct.

CHAPTER X.

THE CUCKOO

(*Cuculus canorus*).

> " Thrice welcome, darling of the spring!
> Even yet thou art to me
> No bird, but an invisible thing,
> A voice, a mystery!"
>
> WORDSWORTH.

> " Sweet bird! thy bower is ever green,
> Thy sky is ever clear;
> Thou hast no sorrow in thy song,
> No winter in thy year."
>
> LOGAN.

As soon as the buds unfold their leaves, and the trees break forth in verdant tints, a bird comes amongst us, announcing its arrival instantly, and as distinctly as any other of our summer visitants,—it is the Cuckoo. This bird hails from the depths of Central Africa, for it wanders fully as far as the Swallow, even to the coast of Guinea, and on this account arrives rather late, say the middle of April at the earliest, or more usually the commencement of May. It inhabits woodlands of every description, whence it wanders amongst the fields and bushes, visiting isolated trees, and everywhere announcing its presence by its loud call. Some little time after the arrival of the male bird, the female makes her appearance, when each pair selects its private domain or beat.

It is singular that so large a bird, one seen, indeed, almost by everyone, should be so little known. Scarcely anyone is really well acquainted with the bird except sportsmen, woodmen, shepherds, and peasants; it is not even recognised when killed and lying dead in the hand: for this reason it will not be out of place to give a short description of the bird in question.

The Cuckoo belongs to those birds which are furnished with reversible toes, that is to say, that the outer toe can be turned either backwards or forwards at will. The size of its body but little surpasses that of our Song Thrush, though the exceptionally long, broad tail, the great length of the wings, and thick plumage, give the bird a much larger appearance than it really possesses. The feathers of the back are gray; the tail is dark gray, with white edges and spots; the throat and upper part of the breast are also gray, while underneath it is marked like the Sparrowhawk, so much so, indeed, that anyone deficient in ornithological knowledge, and overlooking the feet and beak,—those distinguishing marks,—might easily take it for that bird. The construction of these two members, it is true, distinguish it from the *Raptores*, for both beak and feet are feeble, let alone that the outer toe is reversible.* The length of the Cuckoo ranges from thirteen to fourteen inches, of which the tail measures over seven; the spread from wing to wing is from five and twenty to six and twenty inches. The Cuckoo varies much both in size and colour; for instance, some specimens are marked all over with reddish brown, though not belonging to a separate species.

The Cuckoo is an untameable, restless, and shy bird, a bad walker, but very strong and active on the wing. It usually perches high up in the tops of trees, selecting a good-sized branch, as also upon posts and poles; in short, anywhere where it can command a good view all round, for it trusts no man, is careful of its own safety, and does not live on good terms with any other creature. It is so unsociable and spiteful that it will not allow another of its species to come within the boundary of its own beat, and always gets into a towering rage when a strange Cuckoo dares to intrude upon its privacy. Even when migrating it never associates with others of its kind, excepting where caterpillars abound, when it has occasionally been seen in flocks. Its flight resembles that of a Hawk, especially of the Kestrel; and this resemblance is probably the reason why the Cuckoo is so mobbed by the smaller birds. It will dart with the rapidity of an arrow between branches, round corners, and through bushes, with the greatest address; it rarely, however, cares to traverse a large space at a time. The male is almost always seen in company with the hen bird, the latter closely following behind her mate, and often alighting on the same branch, though rarely perching close by him, for the mutual relationship between the two seems to be of a peculiar character. As soon as the male reaches a tree he immediately emits his well-known cry, which, by the way, may be imitated on a common flute to perfection, by sounding the notes F sharp and D natural in the middle octave; the cry is, with a little practice, easily reproduced with the mouth and hand held before it. During the summer the call is increased by repeating the first syllable: this note, expressive of passion, is, however, rarely repeated more than three times, when it is followed again by "Cuckoo," as usual. This bird commences calling before one o'clock in the morning, and does not finish until late in the evening. Occasionally it will repeat its own name more than a hundred times in succession without leaving the spot; indeed, it will do what no other bird is known to do,—call till it is hoarse! The note itself and the manner it is emitted are typical of the bird's habits and character. The same abruptness, insatiability, eagerness, the same rage, are noticeable in its whole conduct. The Cuckoo is a greedy feeder, and a discontented, ill-conditioned, passionate fellow; in short, a decidedly unamiable bird. Its food consists entirely of insects and their larvæ; young Cuckoos, alone, will sometimes eat berries: cockchaffers, fern-beetles, moths, and dragonflies, are favourite morsels, and caterpillars especially, the hairy species, which no other birds ever devour, being preferred. The hairs of these creatures cling so close to the inner membrane of the stomach that the use of the magnifying-glass is necessary to convince one that they do not form part and parcel of that organ.

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* The reversible outer toe is not a character absent from all the *Raptores;* it is equally possessed by the Whitetailed Eagle (*Haliaëtus albicilla*) and the Osprey (*Pandion Haliaëtus*).—*W. J.*

Its keen sight enables the Cuckoo to see caterpillars from a great distance, when it flies quickly to the spot, seizes them, and returns to its perch, without spending much time over the operation, or climbing about after them. This bird is so constantly on the move that it always manages to obtain sufficient food, which is saying a great deal, for its stomach is large, and its powers of digestion almost unlimited. Thus it would be a most useful bird, did it not cause so much damage while breeding.

During pairing time the Cuckoo acts like a headstrong, passionate idiot. How angry rings its cry, and what a rage it gets into when another of the same species dares to invade its territory. It will come blindly to the call of the sportsman, who understands how to imitate its note. Sitting on a branch, with raised tail and ruffled head-feathers, it screams out "Cuckoo" to the world at large. While flying it will often glide slowly in front of its mate, and tell its passion with a low "cwawawa," to which the latter answers, "kwikwikwik," &c., with great rapidity, a cry savouring more of laughter, or a chuckle, than a favourable response to its affectionate adulation. When both are at the height of their courtship the one cries "cuc-cuckoo, cuc-cuckoo," while the other laughs and chuckles. After the breeding season is over both sexes are silent. It is possible that, as a rule, the Cuckoo is content with one mate; yet it is more likely that neither sex is particular in the matter of conjugal fidelity: it seems much more likely that each male should court all hen birds alike, and *vice versâ*, else why this unbounded jealousy?

At the commencement of pairing time the female already begins to hunt diligently amongst the bushes for some suitable nest in which to lay her egg, for this traitor to other birds, impatient, restless creature as she is, does not care to take upon herself the trouble of rearing her own brood, but leaves them to the mercy of others. The little Warblers, thus called upon, must exercise all their activity to keep such an insatiable bird as a young Cuckoo supplied with food, while the real parents are enjoying themselves, flying hither and thither to their heart's content, laying other eggs, and leaving them also to the care of public charity! As we have said before, the hen Cuckoo, before laying, spies out every crack, crevice, or bush, until she has found a nest suited to her taste. She then lays her egg, if necessary, first on the ground, whence she picks it up with her beak, and places it in the home she has selected for it.* The foster-parents generally chosen by the Cuckoo are picked out from amongst some fifty different species of insectivorous birds: those principally selected are Whitethroats, Wrens, Wagtails, Tree Pipits, Redbreasts, Hedgesparrows, Willow Wrens, Sedge Warblers, Meadow Pipits, Whinchats, and even the smallest of our European birds—the Goldcrest! The egg of the Cuckoo is very small, and always marked like that of the foster-parent selected.† Some people assert that the Cuckoo which has been brought up by a Water Wagtail always lays eggs similar to those of that bird. Others, again, believe that the female Cuckoo first seeks out a nest wherein to deposit her egg, and that when the right one is found she looks earnestly at the eggs, with a view of being thereby so affected, that being, so to speak, in a state of pregnancy, she may by this means cause her own egg to assume similar markings to those already in the nest. Neither of these two suppositions have, as yet, been proved to be correct. Naumann believes that he has discovered that one female Cuckoo will deposit eggs in the nests of different species, which, if true, quite upsets one of the above theories. Sometimes two Cuckoo's eggs are found in one nest; these are probably laid by two different birds. Be this, however, as it may, there is no doubt on one point, and that is that the little foundling is deposited in the nest of the foster-parents by its unnatural mother in a most cunning and under-hand manner. Our readers will labour under a great mistake if they for a moment suppose that the young intruder is in any way regarded as a blessing by its foster-parents; on the contrary, they show great anxiety and sorrow if they happen to detect the hen Cuckoo at her manœuvring work. Many of those small birds, whose nests the Cuckoo makes use of, mob that bird most fiercely, treating it as a bird of prey, and demonstrating in the most marked manner possible their violent hatred. On this account the Cuckoo always selects a nest where the entire complement of eggs have not all been laid, so that she can take advantage of the temporary absence of the parent birds. She glides to and from the nest with the caution of a footpad, and rejoices over her success, if she be able to accomplish her end without being observed by the pair she has so cruelly wronged, and thus escape the mobbing she so richly deserves. In the act of depositing her own egg the Cuckoo often breaks one of the others, or perhaps sucks it, though possibly the egg is more often smashed. Usually the rightful owners of the nest lay other eggs after the introduction of the stranger, and then commences the work of incubation. On very rare occasions they will turn the Cuckoo's egg out of the nest, though usually they do not entertain the slightest suspicion on the subject, and pursue the business of sitting without further ado.

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* Though I have not been an eye-witness to the fact, I once found the egg of the Cuckoo in a nest where it was *impossible* for the bird to have deposited the same in any other manner. I may also add that the nest was situated where no other person was in the least likely to have been, so that I am convinced that the egg was deposited by the Cuckoo herself.—*W. J.*

† Upon this point I may refer readers to the number of the 'Zoologist' for March, 1873, in which they will find a paper on the colouring of Cuckoos' eggs, by the Rev. A. C. Smith, M.A., in which that gentleman favours us with copious and carefully-translated extracts on the subject from the 'Journal für Ornithologie' for 1871: these consist principally of a tabular statement, given by Dr. E. Rey, referring to a series of nearly one hundred Cuckoos' eggs, collected during a period of sixteen years, and it is not to be denied that this statement forms no mean proof in support of the opinion given in this work, though, as far as my experience goes, I have always found the colour of the Cuckoo's egg to vary more or less between that of the Water Wagtail and the Skylark. There is a supplementary paper by Mr. Smith, and the discussion is taken up by other ornithologists, in the April 'Zoologist.' My friend, Mr. H. E. Dresser, F.Z.S., in answer to my enquiries on this point, says:—"I have seen *green* Cuckoo's eggs, and my firm belief is that the same female lays the same coloured egg. Naturally she will seek for a nest where the inserted egg will be best cared for, and hence the reason that eggs are so often found resembling those of the foster-parent; but if pressed she will deposit the egg in the first best nest. I have a fair series where the Cuckoo's egg *does not* at all resemble the egg of the foster-parent. I have a nest of Treecreeper's (*Certhia familiaris*) eggs with a Cuckoo's egg in it, a rather large and light variety. The nest was in a position where, even by placing the egg with her bill, the Cuckoo would have difficulty in putting it *in situ*."—*W. J.*

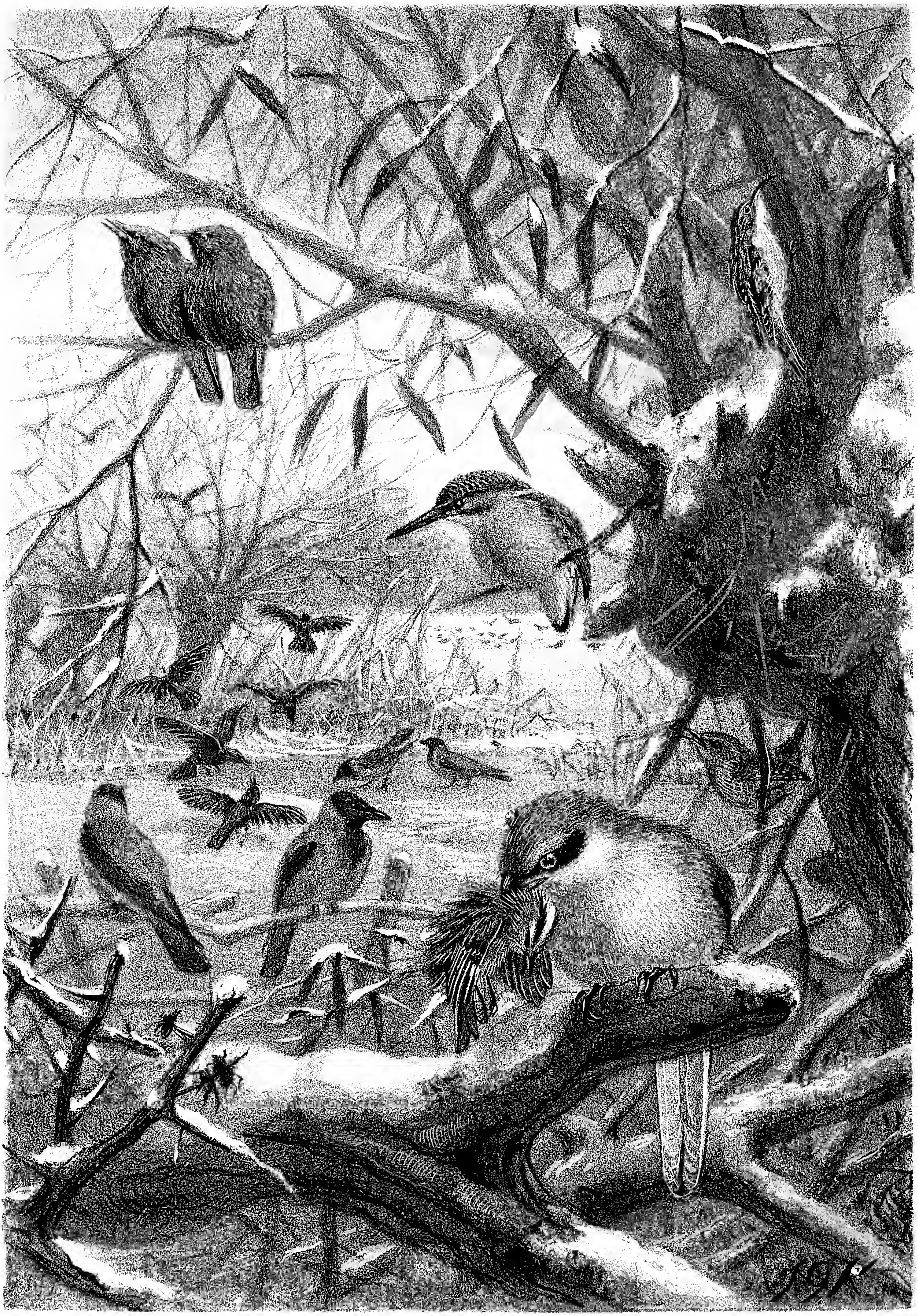
Up to the present no one has ever been able to give any explanation of the why and wherefore of this singular habit of the Cuckoo, namely, that of depositing her brood with strangers. It has been supposed that the Cuckoo lays, at the most, eight eggs every spring, and on account of their being deposited at great intervals she would be unable to hatch and rear them herself. This adds another question to the riddle,—why does she lay her eggs at such long intervals of time? This also remains unexplained! Every possible theory advanced on these points is replete with interest, at least in our eyes. The small size of the Cuckoo's eggs is very remarkable. This large bird lays an egg, which at the most only measures twelve lines in length, an egg which rarely exceeds in size that of the House Sparrow! Besides which, the eggs vary as much in size and shape, as in colouring, though amid all these variations of colour, the experienced eye can distinguish them by the peculiar scribbling marks they possess, or by their shape, spots, &c.; the impression these give is difficult to express in words. The shell is always very thin, fragile, smooth, and but slightly shining. The first eggs are laid in May, the last often as late as July, so that they may be deposited amongst the first or the second brood of other birds.

There are but very few birds which, like the Common Cuckoo, leave their progeny to the care of strangers; and amongst our European Avifauna only one other species, the Great Spotted Cuckoo (*Coccystes glandarius*). This bird is an inhabitant of Spain, and has been known to occur also in Germany: it does not, however, deposit its eggs in the nests of small birds, but, as has been discovered in Africa, in that of the Hooded Crow, while in Spain it makes use of that of the Magpie. The eggs are much larger than those of our species, and are similarly marked to those of the Hooded Crow and common Magpie, though in size they are somewhat smaller than those of the latter birds. Amongst foreign birds, besides the true Cuckoos, there are several species who, so to speak, place their young "out to nurse."

The young Cuckoo's foster-parents behave nobly towards their charge, bestowing on the stranger a care and affection equal to that evinced by them for their own young, rearing it with the greatest care and self-sacrifice. It is not enough that the greedy appetite of the foundling is insatiable, and taxes the efforts of its foster-parents to the utmost, but it grows so fast as soon to occupy the greater portion of the nest, far outstripping its foster-brothers and sisters; the latter it soon disposes of by shifting and fidgeting, until it gets them one by one on its broad shoulders, and heaves them bodily out of the nest, finally remaining in sole possession of the same, where it settles itself at its ease, opening its immense, yellow mouth wider than ever, and clamouring more eagerly even than before for food. Its hunger is unlimited, and it swallows the food brought by its foster-parents, with the utmost greed, as though it had not had anything to eat for a fortnight! "The more it wants," says my father, "the harder the little songsters labour to satisfy it: they fly backwards and forwards, taking no rest until their guzzling foster-child has been satisfied. It is quite touching to watch the anxiety and care which they display. The little Wren, and still more the diminutive Goldcrest, quite lose sight of themselves amid their care for the Cuckoo under their charge. They scarcely allow themselves time to satisfy their own wants, for the feeding of their foster-child is their first and principal object." In olden times it was asserted that the young Cuckoo devoured its foster-parents; this is, however, manifestly untrue, though one can easily understand that observers, on seeing the young bird's immense and ever-open mouth, might, without any great stretch of the imagination, have come to that conclusion. Others have given a finishing touch to the legend, stating that the young Cuckoo does not devour its foster-parents until it has no further use for them! This has led to the custom of holding up the Cuckoo as typical of those ungrateful children, who, when their parents have nothing more to give, and become a burden, ill-treat and neglect them in a shameless manner.

It is impossible to find a stronger proof of the all-powerful strength of maternal affection than that shown by the foster-parents of the Cuckoo. They might well be regarded as patterns worthy of imitation by our human step- and foster-parents! The stranger, who has even turned their own children out of house and home and destroyed them, is tended by the childless parents with as much tenderness and love as if it was their own. If one only approaches the uncouth foundling, which is the produce of a strange egg palmed upon their credulity, they show the most painful anxiety on its behalf, and seek by all means in their power to preserve it from danger and defend it. Fearlessly they flutter round a person coming near the nest, crying pitifully, apparently totally oblivious of their own safety, when intent on succouring their charge. The foster-child understands their warning notes, for it instantly becomes silent, though just before it has been calling out "hip, hip," in hungry tones, to the best of its ability. This extraordinary care is vouchsafed by the foster-parents after the young Cuckoo has left the nest, and lasts until the bird can look after and feed itself; it very rarely happens that it is abandoned by its foster-parents. "In June, 1812," says my father, "a Wren's nest was found on the manor of Fröhlichen-wiederkunft, which contained, at one and the same time, two young Wrens and a young Cuckoo,—quite an exceptional case; the dome of the nest had preserved the young Wrens from being summarily ejected. A friend of mine took the Cuckoo as soon as it was almost ready to fly, and, as is often done by bird-fanciers, placed it in a cage, intending to bring it to me as soon as it was thoroughly fledged. The foster-parents in this case, however, abandoned the foundling, and in a couple of days it was found starved to death; the Wrens having taken up their abode elsewhere, with their own nestlings, had not been able to feed both their own young and the Cuckoo." Such a case of hard-heartedness is, however, very unusual indeed. As a rule the young Cuckoo is well cared for by its foster-parents until able to feed itself. After this it wanders about in the neighbourhood of its old home until August, when it prepares for its migratory flight.

I have met with the migrating Cuckoo in Egypt in the early days of the month of August; the first arrivals, however, were all old birds, the young ones putting in an appearance somewhat later. All Cuckoos exhibit the same hurry and restlessness, for which they are so remarkable; even while migrating, they ever continue advancing, threading the mighty primæval forests of the interior, between 16° and 12°, without stopping anywhere permanently. Where they really go to, still remains a mystery.



J G Keulemans lith. M & N. Hanhart

WINTER TIME.

PART VII.

SKETCHES FROM NATURE.

(Continued.)

CHAPTER I.

THE KINGFISHER
(*Alcedo ispida*).

> "The Halcyon flew across the stream,
> And the silver brooklet caught the gleam;
> The glittering flash of his dazzling wings
> Was such as the gorgeous rainbow flings,
> In broken rays through the tearful sky,
> On a sunny eve in bright July."

Amongst our birds of bright plumage we have a pretty, clever little fisherman, which we meet with along the banks of our streams and ponds, but always singly, or at most accompanied by his mate. He is a small bird with a very large beak, very short tail, and exceptionally tiny feet, and would be considered heavy and awkward, but for the beautiful colouring of his plumage. The head and neck are of a splendid green; all the feathers are bordered at the ends with bluish green, those of the back are bright greenish blue; the wing-feathers black-gray, and their outer webs dark green; the upper wing-coverts streaked with greenish blue: thus the whole of the upper part of the bird appears green or blue, according as the light falls on it; the tints are ever changing, and in the sun are marvellously brilliant; the under portion of the body, as well as the sides of the head, are of a yellowish brown, tinged more or less with a rusty red. The sexes differ but little in brilliancy of plumage, and age produces but little alteration, for females and young birds are almost as beautiful as an old mature male. This bird is about eight to eight and a half inches in length, the expanse of wing being twelve inches.

Our Kingfisher, as he is aptly termed from the regal brilliancy of his plumage, is widely distributed. He is met with almost all over Europe, with the exception of the very high latitudes; in Asia, as far as the river Obi in Siberia; as also in China; and, during the migratory season, he is found in Southern Europe and Northern Africa. Kingfishers, as a rule, do not migrate, most of them remaining in much about the same locality throughout the year, as long as there is any open water to be found; if, however, the frost is very hard, and the ponds and streams are frozen over, they migrate to the countries above mentioned. This bird is fond of brooks well stocked with fish, as well as rivers and ponds, especially such as lie remote from observation, and whose banks are well furnished with bushes and reeds. Each pair has its own beat, and none other is allowed to intrude: this district is thoroughly beaten every day, and all its nooks and corners well examined. The Kingfisher changes its beat according to circumstances. Thus it frequents ponds when they are being cleaned out, or when the brooks and rivers have become so discoloured by heavy floods that it can no longer see to take its prey.

There is much that is singular in the habits of this bird. It is a quick, wild, shy, and quarrelsome creature, keeping to itself, and impatient of associates, above all, those of its own species, which it especially avoids. It may generally be seen under cover of the bushes, perched motionless on some stone, twig, pile, or similar point of observation overhanging the water, watching for fish; it is, however, never so preoccupied by its employment as to neglect its own safety. From time to time it cautiously raises its head, has a look round, and flies off as soon as it perceives anything suspicious. The flight of the Kingfisher cannot be called easy, for it demands a very quick and whirring motion of the wings, and appears to be fatiguing; it is, nevertheless, rapid as an arrow, and does good service. It is but rarely that this bird rises high in the air when flying; it usually skims along close to the surface of the water, following every bend of the stream. Soon after starting it emits a powerful, and not disagreeable cry, somewhat resembling, "gi-gi-gi," or "zi-zi-zi;" while perching it never utters a sound. When compelled by necessity it can swim passably, otherwise it does not practice the art, inasmuch as it only dives from an eminence. Its walk scarcely merits the title, being more of a shuffle than aught else. The capabilities of this bird are limited to fishing, either from the perch or on the wing, and occasionally it will sweep over the surface of the water, and remain hovering like a Hawk for a few moments, when it suddenly darts down to seize a minnow, small carp, roach, or perchance a small trout or other fish. The old bird feeds exclusively on fish, which it swallows whole, and head first, so that the fins do not prove any impediment to the operation. The Kingfisher often fishes for two days before it succeeds in taking anything; and one may often see it dart down into the water without effecting a capture. In the winter it watches fish from the ice, to which habit it owes its German name of Ice-bird (*Eisvogel*).

Kingfishers pair in the early spring months, at which season their habits become essentially different in many respects. The male is more quarrelsome than ever, and is always ready for a fight with another of his own species. His conduct towards the female is very tender, though combined with a certain amount of dignity and reserve; any way, he requires courting at the hands of the female more than other birds do. He perches on a branch or tree, emitting a powerful whistling note to attract the attention of the female: she arrives, tantalizes and teases her swain, and flies on; the male follows, perches on another tree, and recommences calling, when the hen again approaches. This kind of chase is carried on almost all the morning, during which time both birds often wander some distance from the water. After they have paired, and the cock bird has won his mate, they seek a suitable spot where to rear their young. The nest is placed in a hole, in some perpendicular bank on the edge of the river, about two feet below the top, and at such a height from the water as to preclude all danger from a rapid rise of the stream. At page 115 I have already referred to the inexplicable, intuitive presentiment which enables them to select places free from the danger of being flooded.

The hole in which the nest is placed is round, and about two inches in diameter; it is excavated from about two to three feet deep in the ground, widening out at the end until it resembles the shape of an oven. The burrow slants upwards, and on either side of the entrance is a run, which bears traces of the footmarks made by the birds when making their entry and exit. The Kingfishers take from two to three weeks to excavate the hole, for it is hard work, and often interrupted by the presence of small stones which must be passed. Thus a pair of these birds will occupy the same nesting-place for several years if undisturbed, and the entrance be not interfered with. The nest itself is singular enough, and is wholly composed of fish-bones, which are probably cast up by the bird inside the burrow.* By the middle of May the nest contains from five to seven eggs: these are large for the size of the bird, round, shiny, and white, slightly tinged with the yellow of the yolk through the very transparent shell; no other egg can equal them in purity of colour and fineness of polish. How long the bird incubates is unknown, as their nest is in no way easy to find, and is difficult of access. The young are hideously ugly: they are so sparsely covered with down that they look as if it had been glued on in patches; they are at first fed with the larvæ of dragonflies, &c., and later on with fish. The female alone sits, and is fed by her mate during the period of incubation. It is easy to find out whether a hole is occupied by Kingfishers or not, for if it is it will smell so strongly of fish that one cannot be mistaken.

The Kingfisher has apparently but few enemies; this, however, is solely owing to its great activity, rendering successful pursuit extremely difficult. It even manages to escape man through its great shyness and caution, for it usually takes wing before the gunner is within shot. To kill this bird flying, fortunately demands more skill than our Sunday sportsmen are usually possessed of. The true sportsman is no great enemy of the

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* Should our readers care for further information on the nesting of this bird, we refer them to Mr. R. B. Sharpe's chapter on this species, in his highly interesting work, 'A Monograph of the Alcedinadæ, or Family of the Kingfishers,' pp. 6—8. —*W. J.*

Kingfisher, as he is aware that, owing to the small size of the bird and the tiny fish it feeds on, it does not commit any very great damage. Collectors obtain specimens by stalking, or shooting them on the wing: the surest method to pursue, however, is to lay in wait for the bird near its favourite haunts. The Kingfisher may easily be caught by bird-liming posts or twigs, which stand slanting or overhanging the water. This bird may be kept in a large cage, built over some tiny rivulet or stream well supplied with little fish: in this it thrives well for years, after having once become used to the confinement; besides which, it is so kindly and amiable in disposition that it will act as foster-parent to young birds of the same species, and rear them in the absence of their natural protectors.

CHAPTER II.

THE GREAT BLACK WOODPECKER
(*Picus martius*).

"It was noon, and on flowers that languish'd around
In silence repos'd the voluptuous bee;
Every leaf was at rest, and I heard not a sound,
But the Woodpecker tapping the hollow beech-tree."
MOORE.

"IT is easiest to succeed in attaining one's object by the aid of the Great Black Woodpecker.* Watch in the spring, and seek to discover the hollow tree in which he builds: now, when the brooding time is past and he flies forth in search of food, drive a hard plug into the entrance hole of the nest; post thyself on the watch behind the tree till he returns at feeding time. When he perceives that the nest is stopped up, he will circle round uttering dismal cries, and at sundown suddenly take wing again. When this has taken place, be careful to provide thyself with a scarlet mantle, or in default go to the dyer and purchase of him four ells of red cloth, which thou must conceal under thy coat, and tarry patiently under the tree for a day, or perhaps two, till the Woodpecker returns to the nest with the Spring root in his beak. As soon as he toucheth the plug thou hast driven into the hole in the tree with this root, it will then instantly burst out with great strength, like unto a cork from a bottle. Be then ready, and spread the red mantle or cloth under the tree, when the Woodpecker will take it to be fire that is beneath him, and, being affrighted, he will then let fall the root. Some people really light a small fire at the foot of the tree that shall not give out much smoke, and upon it scatter blossoms picked from the plant called spikenard: this is, however, not a good plan, for if the fire doth not flare quick enough, the bird will depart, carrying the root with it."

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* As will be seen from the following note, the "object" here referred to was evidently the possession of some root or leaf to which magic powers were attributed, such as opening locks, &c. The first paragraph in this chapter would scarcely be intelligible to our readers, but that we have found a record of a similar legend in Messrs. Sharpe and Dresser's 'Birds of Europe,' which, though told of the Green Woodpecker, is evidently identical with the tale mentioned in this chapter. We will give an extract at length. "Mr. J. H. Gurney, jun., sends the accompanying account of a curious vulgar superstition respecting the present bird:—'The following is from Aubrey's 'Natural Remarques on the County of Wilts, 1685.' He was a correspondent of Ray's, who, in a letter dated, 'Black Notley, 8br 27, —91,' alludes to this story as a fable:—'Sir Bennet Hoskins, Baronet, told me that his keeper at his parke, at Morehampton, in Herefordshire, did for experiment sake drive an iron naile thwert the hole of the Woodpecker's nest, there being a tradition that the damme will bring some leaf to open it. He layed at the bottome of the tree a cleane sheete, and before many hours passed the nail came out, and he found a leafe lying by it on the sheete.'"—*W. J.*

Such is the legend told in connection with the king of this remarkable family of climbing birds inhabiting our forests.

The Great Black Woodpecker is a splendid bird, somewhat larger than the Jackdaw, though smaller than the Crow. Its plumage is entirely black, except the head, which in the male is of a brilliant red from the forehead to the occiput; in the female the red is confined to a patch on the occiput, not extending to the forehead.

This bird inhabits an extensive range of country. It is found all over Europe, but only singly or in pairs; it also occurs in Asiatic Russia, with the exception of Kamtschatka, in Persia, Syria, and in the Atlas. It lives in large pine forests, especially those situated in mountainous districts, and where the trees are very old. It has now become a rare bird in Germany, owing to the felling of our vast forests. A permanent resident, it only migrates occasionally, and then always but a short distance backwards and forwards. It is only met with as a wanderer in the greenwood, and in small woods never, except when quite out of its reckoning. It selects for its dwelling place some ancient wood, whose creaking monarchs can tell weird tales of what has happened hundreds of years ago. The bird cares not whether the wood be dense or open, provided it is extensive, little visited by man, and contains many old, decayed trees, upon which it can ply its handicraft in peace and solitude: here the Black Woodpecker selects a wide beat, tolerating none other of its own species, the smaller members of the family not excepted, over which it lords it right royally. It is an exceptionally cheerful, active, shy, nimble, and powerful bird, never remaining long in one place; it is seen here, there, and everywhere, traversing its domain more than once during the twenty-four hours: this is easily known, for its cry is heard now here, now there. In a locality in which it considers itself not very safe, it is always especially restless, cunning, watchful, and shy: it is very difficult to observe its habits, for it can only be stalked where the trees are high and thick, and it can hide itself with great facility. It is very interesting to watch this bird in the act of climbing. "He mounts a tree," says Naumann, "with great, rapid jumps, nodding his head more or less with every spring, and shuffling over the rough bark with such ease that when close by, one can easily hear the slight rustling of his claws and stiff tail-feathers, especially in dry weather, and on old pine trees. He has a perky bearing, inasmuch as he carries his head, neck, and the fore part of the breast, well away from the tree. As compared with other Woodpeckers, his movements have something imposing in their appearance. Easy as it is for him to run up the trunk of a tree, it is equally so for him to move sideways, and that without altering his position, while he slips round a tree with so much rapidity that one is lost in astonishment to see such perfection displayed in the art of climbing. He can also, like other Woodpeckers, perform a slightly retrograde movement, but, like these, is unable to descend head downwards."

While climbing, this bird hunts about for beetles and their larvæ, or such other insects as may lay hidden under the bark; as soon as it finds anything, it instantly sets to work with strong blows of its beak to extract the hidden treasure. The keen sense of smell enables it without fail to discover its prey, while the sharp beak soon lays bare the buried morsel, just sufficiently to allow the bird to extract the same with its long and flexible tongue. It also despises any insect inhabiting the forest which it may happen to come across, though it shows a decided preference for the horse-ant (*Formica herculeana*) and its eggs. As soon as it espies a hill of these ants it alights on the ground with alacrity, and approaches with a heavy, hopping gait, when it seeks out a suitable spot, and at once commences an attack upon the well-ordered citadel of these creatures by making a breach in the outer wall of their fortress. The enraged ants instantly arrive in hundreds from all sides, seeking to repair the damage as soon as possible, and punish the delinquent. The Woodpecker, however, quietly awaits the attack, plunges its long, glutinous tongue in the midst of the tumultuous crowd, and then, with evident satisfaction, allows the ants to cluster on that organ, until no more can stick to or bite it, when it suddenly draws it back, ants and all. Besides these insects this bird is very fond of the larvæ of the large carpenter bee, although they are not to be extracted from the timber without great labour: in short, as before said, it devours all insects that are to be met with in wood, no matter under what circumstances they live. These ant-hills, and the drinking places frequented by these Woodpeckers, are the only spots where they alight on the ground, for, except when obliged, they never do so; on the contrary, they, immediately on reaching the branch of a tree, usually cling to the under side of the stem.

The flight of the Great Black Woodpecker is distinguishable from that of the other members of the family, inasmuch as it is unaccompanied by any whirring sound, and the undulating curves are neither so long nor so marked; besides which, the bird does not exert itself as much as the other species do. For all this, the Black Woodpecker rarely flies any great distance at a time, although it shows itself very agile on the wing, when in pursuit of one of its own species or any other member of the family.

If the end of April is fine, the pair begin to think of preparing their nest. The construction of a suitable habitation is a matter involving no small amount of labour, for it must be of a certain size, and the work of excavation demands great exertion. It is true that the bird always selects a tree decayed at the core, and chooses the place where a branch has broken off, or where there is a hole already partially formed, and yet it must labour long and assiduously to adapt it to its liking. The female does by far the principal part of the work. "She first either makes or enlarges the entrance," says my father, the result of whose observations has formed the basis of later descriptions, "from the outside, until it has become large enough to admit of free ingress and egress; after this is effected the cavity inside is excavated, which operation is carried on with much skill and diligence. This is excessively difficult, on account of the little space the bird has to labour in: often the Woodpecker is so cramped for room that it can only dig out an inch at a time; when working thus the sound of its blows are muffled, and the chips thrown out are very small; as soon, however, as a little more space is gained the pieces become larger: the largest chips at the foot of a slightly decayed pine, in which a Black Woodpecker had constructed her nest, measured only six inches in length by a quarter of an inch thick,—not a foot long, and one inch thick, as related by Bechstein. An immense amount of strength must have been required to detach even the pieces which I have just mentioned. What a large and powerful bird must that one be who could hack out pieces a foot long by an inch in width!

"The female only works at the nest during the forenoon, and in the afternoon goes out to feed. After from ten to fourteen days hard labour, the excavation of the nest is completed: it measures fifteen inches in depth below the entrance, and eight inches in diameter, and is so beautifully finished as to be perfectly smooth and without a splinter on its surface. The bottom forms a segment of a sphere, though not a hemisphere, and is lined with a layer of small chips, upon which the eggs are laid: these are from three to four in number, sometimes five, and but very rarely six; they are comparatively small, measuring one inch and from five to six lines in length, by one inch and two lines in breadth, very round at one end, and blunt-pointed at the other, bulging out in the centre; they are pure white inside, and the same outside, polished like ivory.

"All the nests I found were situated in smooth-stemmed beeches and firs, and never in any other trees. The nest is used for several seasons, even when harried, or one of the old birds is shot; on each occasion it is cleaned out afresh, and a few more chips dug out. It is too much trouble for the Great Black Woodpecker to hew out a fresh nest every season, besides suitable trees for the purpose are not so easily found. A new nest is recognizable from a distance, betrayed as it is by the quantity of chips laying scattered over a surface of some ten square feet beneath the tree; a few chips are to be found even under an old nest which has been repaired."

As soon as the female has deposited all her eggs in the nest, both birds begin to sit, and that with exemplary patience, the female doing duty from the afternoon to the following forenoon, and the male taking her place for the remainder of the day. When Great Black Woodpeckers are disturbed while incubating, they emit a peculiar complaining cry, quite different to their usual clear, joyous tones. The usual cry may be thus rendered:—a loud "gleuk, gleuk, gleuk," or "klia, klia, klia," and also a low "keerr, keerr, keerr;" while the tones of distress cannot be given in words, they are, however, plainly expressive of grief. These birds, though continually disturbed, will not abandon the nest; and even if one is destroyed, the survivor will continue the labour of incubation oblivious of its own safety.

During pairing time the male bird becomes quite an "artiste" in the way of instrumental music. He will hang on the topmost branch of a tree, or some dry limb, and hammer away with his beak so rapidly and so hard that he communicates to the branch a tremulous motion, which produces a singular drumming sound, so powerful as to echo through the forest, especially on a clear day, when it may be heard a mile off. This noise sounds sometimes like "orrrrrr," and sometimes like "errrrrr," according to the size of the limb on which he is performing. The rapid movement of the bird's crimson head gives it the appearance of a glowing coal on the end of a burnt stick, which is being quickly shaken to and fro. This drumming sound serves to attract the female, and she comes immediately to the sound, sometimes answering, "gleuk, gleuk, gleuk," to this singular serenade. The Black Woodpecker, like the Blackcock, when "playing," is so preoccupied with the tender passion while drumming, as to lose his usual shyness; at any rate, he may be more easily approached and shot at this time, than at any other. Inasmuch as the lesser Woodpeckers sing their love sonnets after a similar fashion,—although not so loud, on account of being themselves smaller and using smaller branches,—in an old forest, at spring time, one may hear a most singular concert, which astonishes the uninitiated, and vastly pleases the ear of the naturalist, as it forms a most beautiful accompaniment to the songs of the other denizens of the woods.

The young ones before they are fledged are excessively ugly creatures. They have enormous heads, and the corners of the beak are furnished with cartilaginous lumps, which later on form a part of that powerful tool, and disappear as it becomes further developed. They can cling to a tree before they can stand, and climb before they can fly. If left undisturbed they remain in the nest until able to take wing, but climb about nimbly enough inside, often peering out of the entrance of the hole. The old birds bring them up solely on ants' eggs, and continue to feed and look after them for a long time.

When caught early the young birds can be tamed and kept in confinement, if well supplied with ants' eggs, and such food as you would give to a Nightingale. They are very interesting pets, though they do not possess the versatility of the smaller members of their tribe. They live on good terms with their cousins, but this is probably due to their being able to lord it over them. As soon as their childhood, if we may so term it, is over, they begin to use their beaks with effect, so that it is necessary that their cage be made strong enough to resist their destructive efforts. They soon become so used to their custodian that they will carry on all their operations in his presence, and afford him ample opportunity to watch them when climbing, and to observe the wonderful mobility of their tongue.

The pursuit and trapping of the Great Black Woodpecker have their difficulties, inasmuch as this bird has learnt to look upon man as the most to be dreaded of all its enemies. It not unfrequently happens that it is captured on the nest while sitting, but to get within gunshot of the creature is a very difficult matter. This is, we may say, fortunate indeed, for this very useful bird has troubles enough without being shot. Wild cats, martens and weasels assassinate both young birds and adults while they are asleep, while man knocks their houses about their ears, banishing them further and further every year, so that the poor creatures can only find a safe retreat in such woods and forests as are inaccessible to man. The chase of the Black Woodpecker is unremunerative, as the bird has such a disagreeable odour as to be unfit for food. Unfortunately in former days it was everywhere customary to set a price on its head, because it was considered by the *forest conservators* to be destructive to timber! Now, both the Black Woodpecker and its cousins are preserved by all sensible foresters, and justly looked upon as their best and most useful friends.

CHAPTER III.

THE HOOPOE
(*Upupa epops*).

"He flaps his wings, erects his spotted crest;
His flaming eyes dart forth a piercing ray;
He swells the lovely plumage of his breast,
And glares a wonder of the orient day."

The Hoopoe—one of our brightest-coloured birds, as well as one of the most quaint—is occasionally seen on our rich pasture-lands and commons, especially where cow-dung is abundant. In many places it is a regular visitant; and though on the whole rather a rare bird in Germany, yet it is very common in Southern Europe. That the Hoopoe is the victim of slander may readily be gathered from its numerous nick-names,* many of which are totally undeserved, though it must at the same time be allowed that it is not the sweetest bird that flies, as far as smell is concerned, however much our poet Welcker may have to say to the contrary:—

"An mir beschwerlicher Geruch?—
Den lügt mir an des Volkes Spruch."

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* The following is a translation of some of the names which Dr. Brehm here alludes to:—"Stink-fowl, Cuckoo's-sexton, Cuckoo's-lad, Stink-bird, Dung-bird, Dung-dealer, Muck-hen," &c.—*W. J.*

Our friend, the Hoopoe, cannot be mistaken for any other one of our native birds. The prevailing colour of its plumage is a yellowish red, darker on the back than on the under parts; the back and tail are black, barred with white and yellowish bands, and the head is surmounted with a beautiful crest. This is a full and sufficient description of the bird: it measures from ten and a half to eleven inches in length, while the spread of its wings is from nineteen to twenty inches; the beak is attenuated and curved, and often measures over two inches in length.

Our Hoopoe, though not rich in kith or kin, inhabits a wide range. It is found in almost every part of Europe, and occurs over a large portion of Asia, while in the whole of Northern Africa it is a very common bird. It reaches us by the end of March, leaving again in August, on which account it is often called "Cuckoo's-herald," that is to say, the Cuckoo's forerunner. It frequents thinly-wooded districts, pastures, and waste lands, showing a decided preference for fields where cattle graze, and there is plenty of dung lying about: it is always to be met with, in suitable localities, near large herds of oxen. Here the Hoopoe occupies itself busily in foraging for beetles and other insects amongst the dung, which form its principal food.

This bird is easily recognized at a distance by its bright colours, and also on account of its singular appearance and curious behaviour. In the East it is indifferent to the approach of man, but with us it is somewhat shy and difficult to get near: its timidity is so great that it mistrusts all other animals; a passing Swallow, even, will scare it; and if a Pigeon approaches it will fly off to the top of the nearest tree.

When any bird of prey appears its conduct is amusing in the extreme: it throws itself, suddenly, flat on the ground, with outspread wings and tail, in which position it looks so like a bundle of rags that the spoiler passes over none the wiser. Watching this bird's conduct is quite an amusement: at one moment it raises its crest, then lowers it, now fans with it, now makes a low reverence, followed perhaps by a comical nod; sometimes it walks with slow gravity, and the next minute trips along. In short, the bird is always, in a manner, toying with itself. It walks well and is a passable flyer, though any bird of prey can strike it when on the wing.

Before the commencement of the breeding season the male Hoopoe has many a "set-to" with others of his species, for he is an unsociable bird, and, towards such as are his equals in strength, a quarrelsome one too; at the same time the most ludicrous scenes take place between them. On these occasions one hears all the different notes of which the Hoopoe is capable; changing from one to the other they have a very pleasing effect: first one usually hears the "houp, houp," which has been incorporated with the bird's name in almost every language; then perhaps it is changed to "airr," which is expressive of anger or indignation; then to "vek, vek, vek," denoting pleasure or satisfaction. "Houp, houp," is, however, the standard note. The bird is silent after pairing time.

The Hoopoe breeds over the whole of Germany, wherever hollow trees are to be met with in the neighbourhood of large pastures. The nest is placed in holes in trees, walls, and rocks; sometimes on the bare ground. In Egypt this bird builds regularly in the houses in the middle of the towns or villages, because the cleanly habits of the inhabitants(!), even within the precincts of the town or village, renders such a habitation everything that can be desired, as far as the habits of the bird are concerned. The hole is sometimes lined with a few straws, though the eggs are generally found deposited on the bare floor of the hole. The female hatches-out the eggs in sixteen days, and sits so close that she may be easily taken off the nest with the hand. The young ones are at first but sparsely covered with gray down; they are fed by the old birds with larvæ and beetles, and are tended with great care, the parents showing extraordinary affection for the young brood. The nestlings are slow growers, and only abandon the nest long after they have learnt to fly. The nest itself soon acquires a very powerful and disagreeable odour of dung, as the parents are unable, by reason of the awkward shape of their bills, to carry off the excreta of their young; these latter, after a time, are up to their necks in filth, and when this decomposes, the stench of either the young or the old birds is quite unbearable. Doubtless from this the idea has sprung that the Hoopoe constructs her nest of dung. The female, while sitting, does not even take the trouble to keep from defiling her own nest. This disgusting accumulation is the rendezvous of swarms of flies, which deposit their eggs in the mass, so that in the end the nest becomes nothing else than a heap of dung and maggots. The young birds are the most offensive, though the old ones smell far from sweet; this odour clings to them all for weeks after the whole party have left the nest.

A family of Hoopoes affords a very pretty spectacle, old and young vying with each other in the comicality of their postures and gesticulations. Each insect that the old birds capture, with their long forcep-like beaks, is thrown up in the air and caught again in the gape, because without this manœuvre they are totally unable to swallow their prey. Before the old bird has been able to do this the whole tribe of youngsters rush up, and seek to snatch away the morsel; they are, however, too clumsy as yet to succeed. This little exhibition is amusing in the extreme, and the more so if a Hawk or other bird of prey arrives on the scene, when a sudden outcry is raised, and one and all have resort in the greatest haste to the old trick, and in an instant half a dozen coloured rags are apparently laying on the ground,* or the nearest tree is sought; and in a trice the whole family are hidden from sight, the "houp, houp," of the male giving the only clue to their whereabouts.

The Hoopoe is easily tamed, and is a pleasant companion that one may allow to run about the room. When reared from the nest they do well, and, as Naumann states, soon become tame and confiding, not only attaching themselves to their master, but evincing much discrimination and intelligence: they follow him everywhere, even in the open air, without it ever entering into their heads to fly away; they will lavish caresses on him, and can tell from his manner or gestures how to behave, accommodating themselves to his various moods. In short, in this respect they stand far above our most intelligent cage-birds. That the Hoopoe is persecuted by many birds of prey may, from its extraordinary timidity, well be inferred, and on this account it is anything but fair that man should follow their example,—for it much rather deserves his *protection* than persecution.

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* I have myself seen a wounded Hoopoe try to elude my search by going through the manœuvre previously described.—*W. J.*

CHAPTER IV.

THE BOHEMIAN WAXWING
(*Bombycilla garrula*).

> "Diese, fern im hohen Norden
> Meidend ihren Heimatraum,
> Kommen, schnellbeschwingte Horden,
> Rasch daher, als wie ein Traum.
> Wenn auf Land und Meeresborden
> Hoch sich lagert Winterflaum,
> Schmückt ihr Schwarm uns, müdgeworden,
> Nahgereiht, den kahlen Baum."
>
> WELCKER.

FROM time immemorial anything out of the ordinary course of nature has ever been deemed more or less miraculous or wonderful, and for the reason that the marvellous commences where comprehension or understanding ceases. The populace find it far easier to establish a superstition by some expression of their own, though unable to analyse the mystery, than to discover a sensible and rational explanation of the matter.

For a long time the arrival of the Waxwing was regarded as a matter verging upon the supernatural,—not that there was the slightest ground for this belief, except that the bird does not visit us regularly every year. As its name denotes, it is one of the most exquisite birds we have: it is about the size of a Thrush, and beautifully marked. The peasantry, however, often give it names the reverse of complimentary, for they frequently call this pretty, innocent creature by such terms as "Pest" or "Death-bird,"* as though its arrival betokened famine and misery! They say that the Waxwing only favours us with a visit every seven years, and that war, pestilence and famine are inseparable from these visits! Why this? asks the reader. Simply because the Waxwing is not so common as the Sparrow or the Rook! The naturalist, however, has little faith in either nursery tales or the marvellous, but, on the contrary, strives to the utmost of his power to interpret and explain the workings of that masterly and harmonious marvel—Nature. Thus the arrival of this bird has never appeared a mystery in our eyes, for we have long been acquainted with, and are fully able to account for, the irregularity of its habits: by this we have lost nothing, but rather gained.

To begin with, we look upon this lovely creature as far too beautiful to be the harbinger of evil. Its exquisitely soft, silky, reddish gray plumage; the gray, black-and-yellow barred tail; its dark wings, with their white, yellow, and scarlet feathers; the black throat and high crest, distinguish it from every other European bird, and win for it the admiration of all who see it, without their finding fault with its mode of migration. We have, however, observed the latter, or rather become acquainted with the causes that regulate it, and thus have robbed the Waxwing of all that has hitherto been looked upon as marvellous concerning it.

The reason why the Waxwing does not visit us regularly every year is, that it is not always under the necessity of so doing. It inhabits the most northern regions, passing the summer within the Polar circle. It is only lately that its nest has been discovered in Lapland, and but a few years back we were still ignorant as to its true home. Extreme cold and heavy snows oblige it to migrate, because the latter robs it of its food. Under these circumstances it is a regular visitant to Russia and Sweden; and if the snow there is so deep that it cannot find nourishment, it then comes to us, and even goes as far south as the North of Spain. As soon as the weather becomes milder again, the Waxwing migrates homewards, like our Swallow or Nightingale; thus it is rarely seen in Germany earlier than November, or later than the month of March. This explains the whole mystery!

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* "Pest" and "Sterbevogel," German names.—*W. J.*

The Waxwing, on his arrival, shows plainly enough by his conduct what countryman he is. His dwelling-place has, hitherto, been unexplored by man. As yet he has not learnt the bitter lesson that man is his direst enemy, and for this reason he is fearless and confident, or as we say, patient and stupid. Harmlessly perched on a tree, he looks down the deadly tube of the gunner; he cannot, and will not understand why man should thus, without the slightest reason, treat him so cruelly,—destroying a bird's life without a cause: he cannot, I say, understand such conduct. After a time, however, he learns to know man's power, and with the acquired knowledge his behaviour becomes as shy and distrustful as that of other birds. Waxwings on their return-journey seem to be quite different beings from what they were when they first arrived from the north: they have become enriched by knowledge gained through bitter experience.

I will not go so far as to say that this ill-treated stranger is a very cheerful individual; no; he is always either eating or else to be seen perched immobile on some twig or branch: lazy by nature, the very activity which we so much admire in birds is disagreeable to him; he will scarcely take the trouble to hie him to brook or spring to drink and bathe! His flight is easy and rapid, the movement of the wings quick and rustling; he can describe large curves with much dexterity, but never moves, excepting when obliged by necessity. As a songster he shows himself a regular bungler. The ditty, such as it is, is very simple, consisting only of a few trills, a chirrup, and some other indescribable notes, which the female produces with nearly the same skill as does the male. The bird's call-note is a chirruping sound; and its tenderest love-note sounds like "dune." This, together with an insatiable appetite and a lazy disposition, is not calculated to make it exactly a favourite.

The Waxwing, however, has its good points as well. It is more sociable, good-tempered, confiding, and unsuspecting, than most other birds. It takes everything easy, even its own capture. After making one or two ineffectual attempts to escape from its cage, it quietly submits to its fate, eats as much as it can, preens its feathers, and begins to sing. Its conduct towards other birds is good in the extreme, for it has an intense dislike to a fight or disturbance of any kind. Thus it is a pet of the bird-fancier, despite its large appetite and the great mess it makes in its cage. It will eat almost anything. Berries of all sorts are its favourite food, the stones of which it throws up; it will also eat buds, insects, &c., though berries always hold the first place in the "ménu." In captivity it soon becomes accustomed to every description of bird's food.

But little is known of the life and habits of the Waxwing in its native land. The Englishman, Wolley, was the first to discover the nest of this bird in Lapland, in 1856, after a long search and offering a large reward. It is composed of moss and lichen, lined with reindeer-hair, and feathers. Wolley obtained six nests, five of which were found in birch and fir trees, at a little over the height of a man from the ground. In one nest only did he meet with more than five eggs: these are of a pale bluish or pale salmon-colour, speckled with brown and red spots. In that year the breeding time occurred at the latter end of June.

CHAPTER V.

THE GREAT GRAY SHRIKE
(*Lanius excubitor*).

> "The May-fly is torn by the Swallow, the Sparrow is spear'd by the Shrike;
> And the whole little wood where I sit is a world of plunder and prey."
>
> TENNYSON.

On the highest branch of an isolated tree, on a prominent bough of some low bush, on stakes, posts, boundary-stones, and such-like elevated situations, we may often see a bird perched, proud as a Falcon, watchful as an Eagle, and restless as a Flycatcher. This bird is the Great Gray Shrike, or Butcher-bird, a member of a numerous family, which combines in one the attributes of the Falcon and the Warbler. In the spring one may hear this bird singing a song of no common order, and if the listener pays close attention he will find that it is in reality only a jumble, made up of all sorts of strange notes and sounds, as well as portions of the songs of other birds, which it has stolen from its neighbours, and interwoven in the most comical manner possible. This medley, which it has strung together bit by bit, is, however, so pleasant and attractive that one cannot help listening to it with a certain amount of interest. In Germany we possess four species of this rapacious and blood-thirsty family, and this one, the largest of them, is at the same time the most remarkable.

The Great Gray Shrike cannot easily be mistaken for any other bird. Its back is bluish ash-gray, and the under parts are white; the outer feathers of the black and round tail are white, while the others are fringed with the same colour; the pinions are black, with a white band, and are also bordered with white; a black line traverses the eye, reaching to the occiput; the beak is black, and the legs and feet gray. The bird measures ten inches in length, and fifteen across the wings. This description will be sufficient, if the reader also bears in mind the distinctive peculiarities of the genus, namely, the powerful, hooked beak, and the strong Crow-like feet.

The numerous names by which this Shrike is called show that it is known everywhere, and are highly descriptive of the bird, for it is, as well, worthy of the following soubriquets:—"Strangler," "Strangle-bird," "Throttle-angel," "Nine-killer" or "Nine-murderer," as "Watchman," "War-, Mountain-, Bush-, and Thorn-Magpie," "Thorn-twister," "Bush-Hawk," "Tree-watchman," "Wood-master," &c., because it is really possessed of all the qualifications expressed by these names.* In suitable localities one is sure to meet with this bird during both summer and winter, for it is not a true migrant, only shifting its quarters slightly here and there after the breeding season is over. Its habit of perching on some prominent point in its beat renders it easily distinguishable, though it does not care much to admit of a near approach. The Gray Shrike is shy and cautious, warning other animals of danger; hence its name of "Watchman." Its loud cry of "shaik, shaik," acts as an alarm-note to other birds, in every sense, for they themselves are forced to keep out of its way. Its usual food is insects, especially beetles and grasshoppers; it will, however, also seize on field-mice, small birds, frogs, and lizards. My father has seen the Butcher-bird kill a Blackbird, which is larger than itself! Aye, its boldness is such that it will attack the fowler's decoy-birds, and Partridges which may happen to be frozen fast in the snow-drifts, destroying them if it can. In spite of this, small birds do not stand so very much in awe of the Butcher-bird after all, often perching near him without any sign of fear: it would seem as though they could not believe so fine a songster to possess habits so predatory. In the summer, too, it must be said that this bird feeds principally upon insects, except when some young "flyer," an awkward nestling, or incautious mouse, rouses its greed. It either swoops down like a Falcon on one of these, or, hovering for a moment, darts upon its quarry and kills it. It devours its prey, like many others of the same family, in a singular manner. It does not seize the victim in its claws, like a Hawk, but carries it in its beak and claws alternately, to some tree or bush, when it is spitted on a thorn or pointed branch and torn to pieces. This singular mode of proceeding has earned it the soubriquet of "Thorntwister."

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* The English names are equally indicative of the bird's nature: "Butcher-bird," "Mountain Magpie."—*W. J.*

The Gray Shrike lives at deadly feud with all birds of prey: it dashes furiously at either Eagle or other Owls, chases Crows with loud cries, and will not even leave the Buzzard or Eagle in peace. Its courage surpasses its strength, but always ensures a certain result. During the breeding season it is still more watchful, and does not permit any bird of prey, frequenting its domain, to pass unpunished, neither will it allow another individual of the same species to intrude on its beat. Its flight is neither rapid nor lasting, but active and intricate, so that it can generally manage to make good its escape from the clutches of any Goshawk or Sparrowhawk which may seek to punish its temerity.

On fine winter days, and still more so at the approach of spring, this bird gives utterance to the first dawn of love in its curious song. This, as we have already said, is mainly stolen property, for the bird's own notes more resemble a twittering than a song, though they do not sound amiss, because they are often intermingled with the call-note "trouü." The stolen portions are mostly taken from the strains of the Skylark, Whitethroat, Great Tit, Goldfinch, and Swallow, though the scamp cares but little what song it is, provided he can pick it up. The Gray Shrike imitates these tones with extraordinary accuracy, but renders them with less volume and force than the Warblers themselves, from whom it has learnt them. While singing it jerks its tail, which, however, is the way it gives expression to every kind of passionate excitement. The female also sings these stolen odds and ends, though in an inferior style.

The nest is commenced in the beginning of April, and is situated in copses or thickets,—never in the depths of a wood,—on the top of some thickly-leaved tree of moderate height; from the outside it looks loose and slovenly, but the interior is beautifully lined with small twigs, grass-stalks, haulm, and heath-grass; the eggs, numbering from four to six, are laid at the end of April; they are rather large, dirty white or greenish gray in colour, sprinkled with pale olive and ash-gray spots; they are hatched in fifteen days, and, like the young, are objects of great affection in the eyes of the parent birds. The tender nestlings are at first fed solely with insects; later on the old birds bring them numbers of mice and small birds, and on this account they often do a great amount of damage amongst the latter. They defend their progeny at the risk of their lives, forgetting their own safety when that of their offspring is at stake. How intelligently they perform this duty I have already described at page 335.

All Shrikes are easily tamed, and this bird may be trained, like a Hawk, to fly at small birds, such as the Quail. They thrive well in confinement on ordinary bird's food, and are very entertaining, on account of their song and graceful movements. They must not, however, be placed in the same cage with other birds, because by degrees they are sure to destroy the other tenants. By placing a sprig of blackthorn in the cage, one may have ample opportunity of observing how they spit all insects before devouring them. Naumann kept several Gray Shrikes in captivity in a summer-house, in which he erected a small gallows, the cross-piece of which he furnished with pointed nails, upon which they impaled everything that was given them.

CHAPTER VI.

THE PARROT CROSSBILL
(*Crucirostra pityopsittacus*).

> " And that bird is called the Crossbill;
> Covered all with blood so clear,
> In the groves of pine it singeth
> Songs, like legends, strange to hear."
>
> LONGFELLOW.

" CROSSBILL—marvellous bird." A wonderful creature: gipsey amongst the feathered tribe; the Parrot of our forests, whose love and song blossom through the icy winter, whose very life and death are food for fairy tales, and whose beak is so curiously formed that the ever-imaginative inhabitant of the North must needs seek in some pretty legend an explanation of that which he cannot interpret. Its corpse is preserved from decay by Nature, as that of the Ibis was by human agency; while its habits and ways appear so singular, and are acknowledged as such by those who are acquainted with the bird, as to interest the uninitiated whenever they may have the good fortune to meet with it. Its life-history would fill a volume.

As yet we have been able to determine only a few distinct species of Crossbills. They inhabit the northern portion of our globe in both hemispheres. In Germany we possess four species, three of which (*C. pinetorum*, *bifasciata*, and *rubrifasciata*), though differing so little from one another, are yet so distinct from the fourth that I have elected to describe it in this chapter. All Crossbills are easily recognizable, and their name denotes the great peculiarity by which they are distinguished, namely, the beak, the ends of which cross one another, so that the point of the inferior mandible turns upwards, and that of the superior one downwards, this position occurs sometimes on the left, and sometimes on the right side, without the chance difference forming any ground upon which to base a species. The size and strength of the beak is also no criterion as to species, for they are to be met with of all proportions,—thick and thin, long and short. The only points now left upon which to determine the different species are the size and colouring of the bird. The Parrot Crossbill, which we are now about to describe, is the largest and strongest of the four species, and is on this account the most remarkable; it is the only one which possesses strength enough to break open the pine-cones,—hence its name. Besides this, this species, as well as the remaining three, are known by other names, such as "Pine Parrot," "Cone-biter," "Winter-, Christ-, and Cross-birds:" the common name, however, is Crossbill. The colour of the male is a currant-red; on the wings, darker and more grayish; and on the rump, lighter. The female is greenish gray, with the same modifications of shading. The plumage of the young male partakes somewhat of the character of both old birds. The length of the bird is eight, and the expanse of wing fourteen, inches.

My father used to call the Crossbill the "Gipsey-bird,"—a happy cognomen,—for, like that singular race, it wanders half over the globe. In all districts where there are extensive pine forests, and yet none of these birds are to be met with, they suddenly appear in large numbers in some wood where they have not been seen for years: here they settle, build, breed, and then vanish as quickly as they came, with the exception of a few stragglers. One can never reckon on their appearance with any degree of certainty, even if pine- and fir-cones are plentiful, although they never come to us but in seasons when such food is abundant. They are probably annual visitants to the immense forests of the Arctic regions, as well as to those of Lithuania, Russia, and Sweden; but with us, in Central Germany, they often do not occur for a period of five years. Like true gipsies, they pitch their camp where they are well off,—that is where there is plenty to eat; otherwise they roam about in all those countries which lie between 30° and 60° of north latitude, wherever pine forests are to be met with: these they exclusively frequent, for in a state of nature they, as a rule, feed on the seeds of the pine, though they occasionally devour insects. Their beak bears evidence of this fact, and they have to thank this nourishment for the imperishableness of their bodies, as the turpentine contained in the pine-cones so thoroughly saturates their whole bodies that they are utterly uneatable, and can be preserved for a very long time. If they are kept in a dry place they will withstand the ravages of decomposition for many years.

A flock of Crossbills at their work, clinging to the topmost branches of a snow-laden pine in the winter, affords a beautiful spectacle. These little red birds stand out in relief against the dark green foliage and the pure white snow, giving the appearance of a Christmas-tree with its pendant decoration of rosy apples, though they differ from these ornaments, in that the lively band is always in a state of quiet motion: they climb up and down like Parrots; some feeding; some playing; others chattering softly to one another; those only who have had their fill sit motionless in one place. From time to time a male bird will perch on the topmost branch of the tree and serenade those below him with his pleasant, low, twittering, and sometimes purring ditty; these keep calling, "geup, geup, geup," or "tzik, tzik," so as to keep the company together; while the females often chime in with a soft, "jip, jip." This forms a charming accompaniment to the song of the male bird at the top of the tree. Below it is a comical sight: one hangs head downwards; another clings with feet and beak in the air; a third twists its heavy head hind part before; while a fourth is occupied carrying a fresh cone on to some neighbouring branch. The labour of getting their food is by no means a light one, for every seed the Crossbill swallows has to be dug out of the pine-cone in which it lies buried. The Parrot Crossbill appears to be the only species of its genus which can open a pine-cone without any very extraordinary effort; the remaining species can only open those of the spruce or larch. The process of breaking them open has been carefully observed by my father, who describes it very clearly. The bird first of all bites off a cone, and drags it by the stalk to a thick bough; here it seizes the cone with its claws, and nips off the thin end of one of the scales with the sharp point of its bill, then opens its beak somewhat and thrusts the points of the mandibles under the seed-cover, wrenching it off without much difficulty by a lateral movement of the head; now the bird squeezes out the seed with its tongue, passing it into the beak, where it is divested of its shell and the scale attached, and the kernel is swallowed. The bird's strength is such that it can at one time raise all those scales which lie above the one under which it has inserted its beak. The action of forcing open the scales is always performed by the upper mandible, the lower one being supported against the pine-cone; thus it happens that the right or left side is turned upwards, according as the bird may be right-beaked or left-beaked, so to speak, or, in other words, according to the position of the bird's mandibles. The crossed bill could not be dispensed with in this operation; it is only necessary for the bird to open its beak slightly so as to give it extraordinary breadth, and then but a slight lateral movement of the head is sufficient to wrench off the scale. The great development of the masticatory muscles gives the necessary power to the beak.

As soon as the bird has finished one cone it immediately gets another: it generally takes from two to three minutes to finish one, and not unfrequently drops it before it has devoured a third of its contents, especially if disturbed. The bird will often fly as far as twenty paces, with this disproportionately heavy burden, to a tree the branches of which are large enough to furnish a satifactory work-bench. The presence of these birds in a tree is discovered by the falling cones, and the crackling noise they make while stripping them, let the birds themselves be ever so silent. When they have stripped the tree of the cones, they descend to the ground to operate on those that have fallen below; with this exception, and for the purpose of drinking, they never at any other time alight on the ground, and one may easily see by their clumsy gait that they are not at home on mother earth. When forced by necessity, they will content themselves with other seeds of an oily nature, while insects are never rejected.

Crossbills are most harmless, good-tempered, trustful creatures, and only become shy after repeated persecution. They will, so to speak, look down the barrel of your gun, and not unfrequently, if one bird is shot, its companion will still remain quietly perched in the tree, scarcely moving sometimes if fired at itself. Sociable, as is indeed their nature, they always invite passers by, of their own, or allied species, to the feast, or themselves accept a like invitation. A single member of the flock rarely separates itself from its companions. They are very restless birds, especially during thunder-storms, when they appear to be unusually excited. A caged Crossbill has been known to fall dead from its perch after a very heavy clap of thunder.

Love produces an entire change in their conduct. The tender passion is not confined to any particular season of the year, but developes itself when food is plentiful, whether in spring or autumn, summer or winter. The Crossbill frequently sings his love ditty when the rest of animated nature is silent, has migrated, or is wrapt in winter slumber. The male bird tunes his serenade with much fire and energy from the topmost branch of some fir-tree: he is very restless, however, and flutters, twittering, to and fro, often singing while on the wing. The female surrenders at discretion, after some slight exhibition of coyness on her part; after which she attaches herself to her partner, and henceforth clings to him with much fidelity and the greatest tenderness. Both birds seem to have but one heart, one soul. Now commences the labour of building the nest,—a most carefully and artistically constructed edifice: it is placed under cover of an overhanging branch, which shelters it from the winter's snow; the foundation is made of moss-covered fir-twigs, while the lining is composed of a fine web of still smaller twigs mixed with moss and soft feathers; the walls of the nest vary in thickness according to the time of year. The eggs are three or four in number, and comparatively small; they are bluish or greenish white in colour, speckled and streaked or veined with pale red, red-brown and blackish brown spots and lines. The female only engages in the work of incubation, while the male feeds and tends her with the greatest assiduity. The former remains in the nest from the day the first egg is laid, so as to preserve the germ of her future family from the inclemency of the season, though she only commences to sit in earnest after the full complement of eggs has been deposited: the young are hatched out in from fifteen to sixteen days, and are brooded by the mother for several days after. Both parents feed their offspring until their beaks are fully developed, hardened, and crossed, or, in other words, until they can feed themselves. The down of the young bird is thick and of a blackish gray; their first plumage is blackish gray above, with light edges to the feathers; underneath it is whitish gray, with dark longitudinal streaks. The adult dress is only assumed after the second moult.

Crossbills may be easily captured by covering the top of a fir tree with lime-twigs, or, if one has a call-bird, by fastening the twigs to a tall pole or stake, and suspending the decoy from the same. Confinement does not distress these harmless creatures, as they soon become accustomed to it, and clamber about the cage; they are always in motion, sing diligently, live on the best of terms with their fellows, and soon learn to know and love their master. As pets, then, they may in every way be recommended. In high-land districts they are welcome guests, and much liked: there is scarcely a cottage where they are not to be met with. The nailsmiths, above all other mechanics, are most fond of these birds; a preference due possibly to the old legend, which says that they tried to draw out the thorns from the forehead, and the nails from the hands and feet of our Saviour.

Other mountaineers are very fond of them, and hold them in great honour. A friend of mine once met with a road-man in the Ore mountains, between Saxony and Bohemia, who had one of these birds in a cage before him on the heap of stones he was breaking; and when asked what he brought the bird there for, the poor fellow said that he was obliged to be away from home all day, and could put up with everything but the absence of his pet! Such is the intimate and tender connection which subsists between this creature and man.

The Crossbill can be kept for a long time when fed on hempseed, though its natural food undoubtedly agrees with it much better. Sooner or later, unfortunately, the air of a room changes the splendid red plumage of the male to a less pleasant yellow, thus robbing him of much of his beauty.

CHAPTER VII.

THE HOUSE SPARROW
(*Passer domesticus*).

> "Touch not the little Sparrow, who doth build
> His home so near us. He doth follow us
> From spot to spot amidst the turbulent town
> And ne'er deserts us."
>
> B. Cornwall.

The Sparrow must indeed be a bird of some importance, inasmuch as it is so much spoken of. Undoubtedly, being so universally known has its disadvantages, for everyone fancies that he knows the bird, and considers himself justified in abusing it. I hold, however, that it is just those people who raise such an outcry against the Sparrow, who do not understand the bird. They are, it is true, acquainted with the bird's appearance, but do not know how it lives, how it fights its way through the world, or how much more good it does than harm. Who has ever recognized its services, or ever spoken a word in its favour? At the outside, some fellow blessed with an appreciation of the comical; or the cynic, who stands amused and astonished at the bird's 'cuteness and knowledge of the world. No one else! The Sparrow's sins and shortcomings, its debts, so to speak, have been most carefully noted down, together with usurious interest; they have been duly estimated, and over-estimated too;

but no one has ever given a thought to its useful labours in the vineyard! Under such circumstances as these the most honest creature on earth would be condemned as a scamp and a rascal by popular vote! Let us, then, strike a fair balance between the Dr. and Cr. account, and to this end examine the life of the Sparrow more closely than is usually done.

Our Sparrow is, amongst birds, what the dog is amongst mammals,—the most faithful friend and companion of man. It is found in all parts of the Eastern Hemisphere where grain is cultivated, and has lately been introduced into America and Australia as a *destroyer of insect-life!* It is true that the Sparrows of China, Japan, and Central Africa, are not identical with our species, still, with the exception of their bodily difference, they are all more or less alike; their powers of intelligence, their characters, if one may so term them, are the same. All House Sparrows live on the most intimate terms with man, sharing with him both board and lodging.* The cultivation of grain causes them to frequent such localities as are not entirely buried in the woods; they prefer villages surrounded by farms, but are, nevertheless, very common in all large towns. Everywhere they live in company with man, and this probably accounts for their extraordinary intelligence.

For its size, the Sparrow is undoubtedly the cleverest of all animals. At page 123 I have already alluded to the wonderful sharpness and quickness displayed by this bird, and need, therefore, say but little more on the subject. When one observes this awkward bird,—a bad walker and flyer,—one cannot help remarking the disproportion existing between its bodily powers and its capacity for intelligence. The Sparrow knows man and his habits by heart: it never risks its independence in his hands, nor ceases to hold an unfavourable opinion of the lord of the creation! The older the bird is the more is this distrust developed: a young Sparrow is a dunderhead; the old bird, a sage! Cleverness, cunning, artifice, caution, and memory combined, distinguish its conduct. The Sparrow is not a creature with but one idea, but versatile in the extreme; to man's cunning it opposes its own 'cuteness; artfulness is met by caution, whilst its cleverness and patience render abortive all plans laid for its capture or destruction. It is not easily deceived or ensnared; it first proves, then judges, and finally comes to a definite determination. It is perfectly aware that man is its most bitter enemy, and yet, in spite of all this distrust, it follows him everywhere, and attaches itself to him, for it is well aware that it is indebted to man for its nourishment.

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* The so-called Spanish Sparrow (*Passer hispanicus*) has in this respect nothing whatever in common with our bird, but lives quite apart from man, in low swampy localities.—*Dr. A. E. Brehm.*

Thus, supply of food is the bond which links this bird to us. The Sparrow feeds principally on grain, especially such as is of a farinaceous nature. It is fond of wheat, oats, and barley, but millet is its favourite food; next to these seeds it feeds on buds, fruits of all kinds, and sweet berries: hence it is, *at times*, destructive, but the damage done can scarcely be looked upon as very great, for the season during which the Sparrow robs man, is so short as to render the mischief scarcely perceptible when we would seek to estimate it; and it is only when a flock of Sparrows settle on a single cherry-tree or vine, or attack one wheat-field, or bed of seeds in particular, that the theft makes itself felt; and when such forbidden delicacies are plentiful the loss is not worth speaking of. It is only when a certain class of agricultural and garden produce is ripening that the Sparrow is destructive; during the remainder of the year it merely gleans what would otherwise be lost. Now we will turn our attention to the utility of this bird. It must be well borne in mind that besides the useful grain which we have just mentioned the Sparrow devours at least as great a quantity of seeds which are hurtful to our agriculture, as well as insects, as long as they are to be met with, especially the following:—cockchaffers, beetles and their larvæ, butterflies and their caterpillars, which are as we well know excessively destructive, grasshoppers, locusts, plant-lice, &c.; in short, a whole army of noxious pests. Thus, on the one hand, we find that the Sparrow does but little harm, and that occasionally; while on the other, it does an immense amount of good; and for this it is despised, abused, persecuted, and killed!

I do not deny that the Sparrow is not to a certain extent a nuisance: its everlasting chirrup, chirrup, chirrup, cannot exactly be called charming; and when one hears a chorus of such music, there is no doubt it is utterly unbearable. Its warning cry of "terrr," as well as its voluminous abuse—scurrilous in the extreme—when quarrelling, is not pleasant to the ear; neither is the bellowing of a bull, the grunting of a pig, the braying of a donkey, or howling of a dog, particularly agreeable; while the cackling of hens and screaming of geese are decidedly not to be admired; and yet we put up with these untoward sounds. Wherefore, then, need we abuse the Sparrow.

To censure this bird for aught else would be unjust. More eager than all other birds, in matters appertaining to the tender passion, it exceeds the bounds of good manners and continency in a most shameful way; a more insatiable lover cannot be found. The behaviour of the Sparrow changes before pairing time even: he first gives utterance to a note resembling "shilp," which is repeated with unvaried perseverance; he next approaches his *inamorata*, bowing and scraping with fluttering wings, piping to her in the softest tones, "dee dee," or "dure dure." The coyest heart could not possibly resist such tender wooing; and the lady Sparrow is anything but a prude: on the contrary, she bows willingly enough before the altar of Love, and for this is rewarded by her ardent lover with the most exemplary fidelity and tenderness,—ten, twenty, aye, thirty times, in succession does he salute his beloved partner; a proceeding evidently greatly to her taste. Desperately jealous, he is ever ready to attack any interloper, and resent the slightest attention bestowed on his love; and he will fight long and boldly, until his enamoured adversary is put to rout. In the matter of fidelity to one partner he shows an example to erring humanity, well worthy of imitation.

The pair, once matched, immediately proceed to build their nest. They make the cradle for their young in any place that appears suitable in their eyes,—in holes, cracks, and crevices of all kinds; sometimes amongst the thick boughs of a tree; at others, inside a building of some sort, though always where there is a free ingress and egress, often in the open. If one pair makes good choice of a locality its example is immediately followed by others. Old, and on that account large, Storks' nests are often occupied by colonies of Sparrows, and many trees are almost covered with their nests. These scamps willingly seize on the finished nest of the House Martin, or on an already-occupied Starling's box. Much has been related of the dire revenge taken by the rightful owners; but of the truth of these assertions we have not as yet received substantial proofs. A very eligible nesting-place is productive of much quarrelling and strife amongst the Sparrows themselves. The construction of the nest varies much with the position selected. The breeding-nest is not unfrequently an extension of the winter edifice which these birds construct; while in other cases it is a rough, ragged bunch of materials, with an entrance-hole at the side. From the outside the nest always presents a most slovenly appearance, whereas inside, on the contrary, it is neat, soft, warm, and lined principally with feathers. The eggs are fragile, from five to six in number, bluish or whitish, spotted, speckled, or blotched with different shades of reddish brown or ash-gray; they also vary very much: incubation is carried on by both parent birds, and the eggs are hatched in from thirteen to fourteen days. The young are fed exclusively on insects. Eight days after the first brood has flown the old birds find another nesting place for the next family; and in eight days more the female lays again. Old birds breed earlier and oftener than younger ones; in many years they will rear three broods, and in an unfavourable season two at the very least. Soon after the young have flown they assemble together in bands, and begin to enter upon the battle of life.

The first brood may be taken without the slightest compunction, as they are excellent eating, and it is not a bad plan to put up small boxes for the old birds to breed in, where the young can be easily got at, else the savoury morsel is sometimes difficult to obtain, as the parents soon become sharp enough to place their nest in such a position as to render abortive any attempt to rob it. Shooting or catching Sparrows can only be pursued for a short time with any considerable success, and cases have been known where a few out of a flock, having managed to escape the clutches of the fowler, have remembered the lesson for years after, or have handed down their experience, as a tradition, to posterity.

As a cage-bird the Sparrow is not to be recommended, as it cannot, even in an ordinary degree, be tamed.

CHAPTER VIII.

THE CHAFFINCH

(*Fringilla cœlebs*).

"Stand still a moment!
—Spare your idle words,
I'm the perpetual mobile of birds;
My days are running, rippling, twittering streams;
When fast asleep I'm all afloat in dreams."
Montgomery.

Few birds unite in one and the same being so many good qualities as does our old friend the Chaffinch. The name we Germans give him is indicative of his qualifications,—"Edel-fink," or "Noble-finch," so called because he is essentially a noble bird, the type of the Finch family. Such a name is not given without foundation.

The Chaffinch inhabits the whole of Central Europe, going far north, and in the winter travelling as far south as Africa. In Lapland its place is supplied by the Brambling (*Fringilla montifringilla*). In our Fatherland this bird is met with everywhere,—in the mountain and on the plain, in woods, groves, and gardens. It is in reality a bird of passage, though some individuals, especially males, remain with us throughout the winter. The hen bird always migrates, generally returning to us about the middle or end of February, and stopping until October or November. In the migrating season Chaffinches associate in large flocks with other Finches, wandering about the fields in sunny corners, until they take their final departure. On their return-journey one rarely meets with them in such large assemblies. The males always return first, straightway visiting the old home, where, after some time, they are joined by the hen birds, when the pair soon begin to think of building their nest. Now, almost every minute, one may hear the simple, but loud-ringing song of the male Chaffinch, for which it is so celebrated, and which renders this bird so valuable in the eyes of the "fancier." It is true the Chaffinch is only a second-rate performer,—as far as our private judgment and opinion are concerned, in opposition to that of the connoisseur in Chaffinch-song; the latter, however, looks upon the Chaffinch as a rival of the Nightingale, and the two birds have alike earned a reputation, and been the subjects of more than one stanza. The song or strain of the bird we are now writing of, consists of a series of short notes with a regular termination; still, almost each individual bird possesses one, or more often two, variations peculiar to itself, which it sings at will; and the songster of each neighbourhood has its peculiar characteristic. Thus it is that fanciers of this bird recognize so many different strains. In short, this especial branch of bird-fancy is in itself a singular taste.

Like as islands, and oases in the deserts, are often inhabited by races peculiar in their individuality, so there are, or rather used to be, certain localities in our German Fatherland where the inhabitants differed essentially and distinctly from those of the rest of the world. These people were more learned in the matter of Chaffinch-song than were the Druids of old in the art of prognostication or augury by the flight of birds; and their high-priests did not hesitate to assail with the epithet of "blockhead" any individual who looked upon the Chaffinch as an ignoble, but useful creature, of whom the sane and respectable portion of mankind spoke with the greatest reverence! That these people were essentially a peculiar race will be patent to everyone who has ever visited such an oasis or island.

Ruhla—situated in the verdant dales of Thuringia—is just such a place as we have described; greener and fresher, perhaps, for the very reason that it is a veritable oasis. Sad to say, the song of the Chaffinch has now almost died out there; the old generation has passed away, and with it the poetry of the songster has vanished also, so much so, that the gray-beards say things are not as they were in the good old days of yore,—neither with the pursuits of the younger generation, nor with that which they cared for in their youth, namely—Chaffinches! In their day each one possessed his bird, which was far better known and described than has ever been done by the naturalist, and that only by its song. "There were cutlers, haft-cutters, file-cutters," said our informant, "who each had his Chaffinch hanging in a cage at the window, and whistled to it while working at the vice the livelong day, until the bird had learnt something from its master." After work and on Sundays these men used to drop into one another's houses to pit their birds against each other, and he who possessed the best performer was a man of note and an object of envy; proud, indeed, of being the happy possessor of the bird.

The woods were hunted high and low to hear the Chaffinches singing *au naturel;* and if one was met with which sung above the common, no trouble was spared to catch it. It is said that if an inhabitant of Ruhla, in the Hartz, happened to come across a first-rate bird in the woods he immediately returned home, and taking his call-bird captured the wild songster. These wanderings in search of birds often led to bitter feuds between plucky individuals, or the keepers and foresters, for a true Ruhla lad was always ready to risk his life for his bird. As to the different classes of songsters their name was legion, and their individual characteristics infinite ! *

It is utterly impossible for the uninitiated to describe the different strains of the Chaffinch's song; and it suffices for us to say that these names, given in the footnote, all bear upon some line or sentence which is supposed to resemble the bird's song. It is useless for us to give more than one or two as examples. Take for instance the "Bridegroom," whose particular song is thought to represent the following sentence in German: "Fink, Fink, Fink, Fink hörst du ? willst du nit den Bräutigamzieren ?" (Anglice: "Finch, Finch, Finch, Finch dost

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* The following is a list of the local names as given by Dr. A. E. Brehm in the original, but which being untranslatable we have appended in German, leaving it to the ingenuity of our readers to find their equivalents in the English language :—" Der ein- und zweitheilige, der Wald-, der Schmalkaldner, der härfner und der härzer Doppleschlag; das einfache Wirr, das grobe Wirr das Kutschen-, härzer und Hochzeits gewirr; das Gutjahr (Goodyear) und das Tollgutjahr (Mad Goodyear); das Wichtscheer, das Potscheer, das Kienöl, das Quakkienöl, das Würzgebühr, das Nachtsgebühr; der einfache, der gute und der schlechte Weingesang (the Simple, Good and Bad Weinsong); das Wätzjeh, das Zeterwätzjeh und Drehwätzjeh; der Scharf, gleiche und urnshäuser Scharf; das Raadesthier, der Bräutigam (Bridegroom), das Kautzjoi, der Larzer, der Reitzug, der Tannenwälder (Pine Forester), der Fiedelman (Fiddler) das Bockshorn (Goatshorn)." In a similar village in Austria they have the following nicknames :—" Den Reitherzu, den Goldschmiedbus, das ziehende, lachende, übergehende Wilfeuer, den gross-und kleinrollenden Sitzaufthül, Musketir, Malvesier, Kuhdieb, Wei, Sparbarzier, Doiteret Mistsoviel, Zitzegall Pfingsteln," &c.—*W. J.*

thou hear? wilt thou not play the bridegroom?"). The "Winesong" runs thus: "Fritz, Fritz, Fritz, willst du mit zum Weine gehen?" (Ang.: "Fritz, Fritz, Fritz, wilt thou to wine with me?"). The "Doppelschlag," or double-song, is, however, the most perfect, and may be expressed by the following syllables: "Finkferlinkfinkfink, zischesia, harvelalalalaziskutchia." The remaining variations of this bird's song may be interpreted in a similar manner.

The Chaffinch is a stormy swain, who, in matters connected with the tender passion, is averse to anything in the way of a joke. Jealousy renders him perfectly blind to every danger but the approach of the hated rival, and this renders his capture an easy one: if a tame bird, with a lime-twig tied across its shoulders, is allowed to run about near where a wild one is singing, the latter in a few minutes dashes at the intruder and is speedily caught by the birdlime. Every male Chaffinch has to engage in many a hard-fought battle before he wins his fair one, for rivals are plenty, and the female surrenders her favours to the strongest. When a disengaged spinster is to be met with, duels, of the sort, are innumerable, and while two gallants are having a bout two others may be heard singing their challenges for the combat, and not until the battle has been fought and gained, does the conqueror obtain the prize! The female, when won, attaches herself most trustingly to her champion, and is treated by him with marked tenderness. After a honeymoon of a few days the happy pair think about building their new home: now, pear-trees, apple-trees, limes, oaks, and all other moss-covered trees, are thoroughly inspected, until a suitable fork in some large branch is found where the nest may with safety be placed. The delicate fabric is begun with moss, lichen, and grass-bents, and is perfected and lined inside with hair and feathers. The eggs are laid at the end of April: they are four or five in number, pale blue, spotted with blackish brown. At the end of thirteen days' incubation the female, unaided in this duty by her partner, has the pleasure of welcoming her callow brood to life and light. Now, indeed, there is plenty of work for both parents, and the requirements of the nestlings in the way of food leave the male scarcely leisure enough to pipe his joyous ditty. However, whatever is commenced with zeal must end in happiness, for barely ten or twelve days after the youngsters are hatched they are in a condition to leave the paternal mansion, and look to themselves in a life of freedom. Father and mother feed and watch over them still for some time after they have flown, and then leave them to their fate.

The parents, however, have not yet fulfilled their duties for this year. After a short rest they prepare to build a second nest and rear another brood; and if they are fortunate with this family, and the weather is favourable, they will sometimes rear a third brood. Inasmuch as the old birds nourish their young exclusively on insects, of which they destroy immense numbers, their utility is self-evident, and even after breeding time the family prefer insect food to any other; and as the latter consists of oleaginous seeds, principally those of weeds, the Chaffinch cannot be regarded otherwise than as useful to mankind.

In some places Chaffinches are caught in large numbers and eaten in bushels, like larks, and are productive of some profit; but in my opinion the benefits they render us in other ways cannot be expressed in words, and far surpasses their value as material for human food, let alone the pleasure they afford us by their cheerful song and sociability. We call the Chaffinch the "Noble Finch;" the name speaks volumes: a noble creature can only be justly estimated by noble hearts.

CHAPTER IX.

THE YELLOW-HAMMER
(*Emberiza citrinella*).

> "Five eggs, pen-scribbled o'er with ink their shells,
> Resembling writing-scrolls, which Fancy reads
> As Nature's poesy and pastoral spells—
> They are the Yellow-hammer's, and she dwells,
> Most poet-like, 'mid brooks and flowery weeds."
>
> JOHN CLARE.

MAN'S true companion in the winter-time,—the harmless beggar who, when the snow has laid her spotless cloth outside, comes and begs for food in our farm-yard, is the Yellow-hammer; too well known by all inhabitants of towns and villages to render any but a cursory description necessary.

This bird is somewhat larger, or rather slimmer and longer in build than the House Sparrow, namely, seven inches in length by eleven and a half in breadth across the wings. Were the Yellow-hammer not so common, it would be regarded as a bird of brilliant plumage: its colouring is a bright golden-yellow, striped with red, gray, green, brown, and blackish lines; it is also spotted and blotched, and the male, especially, is brightly and strikingly marked. This bird is the representative of a rather numerous genus, which is clearly distinguishable from the Finches by the shape of the beak, as also by difference of habits. All the Buntings are pretty, strong birds, and either occasionally or permanently, frequent woods, bushes, gardens, and farm-yards; they are common in most localities, and are only partially migratory. The males are distinguished from the females by their more brilliant plumage: the colouring, however, of both sexes is exceptionably soft and delicate. Buntings live either in pairs or in flocks, and most species are gifted with a very simple and monotonous song. The gait is hopping and walking, and the flight is in undulating lines. Their food consists of different sorts of seeds and insects. The nests of these birds are mostly of simple construction, placed on the ground, and usually contain five eggs, which are scribbled over with lines almost resembling writing. All Buntings become excessively fat where food is abundant, and are excellent eating; a fact of which the ancients were well aware.

The Yellow-hammer is found throughout Europe, especially in central latitudes. In Germany it is common everywhere. During the winter it frequents the villages, and in the summer it is found in every kind of wood and coppice, though more usually nearer their borders than their centres. From autumn to pairing time they go in flocks, shifting their quarters from one place to another. As soon as the weather has become settled the Yellow-hammer turns his attention to the business of breeding, when his short song may be heard without intermission. In spite of his sociability he is ever ready to fight and squabble with those of his own species, though showing the greatest goodwill towards other birds, with whom he has but little in common, especially the Thrush. Although apparently of a sluggish nature he is ever in motion, except when moulting or singing, at which time he will sit for hours on the same spot. He sings from the earliest morning hour until very late in the evening, his song lasting without cessation from pairing time until the moulting season comes round. It is no wonder, then, that the populace have found means to translate his ditty into the vernacular, by sentences, which have their equivalent in the English phrase,—"A very little bread and no cheeeese;" the German sentence, "'Sis, 'sis, 'sis, 'sis viel zu früh," may be rendered,—"'Tis, 'tis, 'tis, 'tis much too early." When singing the Yellow-hammer always selects the top of an exposed branch, thus showing its affection for man, for it does not evince the slightest fear of him; on the contrary, it allows him to pass and repass without being in any way disturbed in its song. If the season is favourable this bird's clumsy nest of bents may be found in the low bushes, as early as the month of March, generally low down amongst the twigs, and but rarely more than two feet from the ground. The nest contains from four to five eggs: these are thin in the shell, shiny, or dull; their colour varies from a dirty white to a reddish tinge, covered with a number of dark spots, veins, and zigzag lines; these peculiar markings prevent anyone from mistaking the egg for that of another bird. The period of incubation lasts thirteen days, and this duty is carried on by both parents alike. The young are at first exclusively fed on insects, and are already able to fly and take care of themselves when three weeks old. The old birds now prepare for a second, and in many years even for a third brood.

The Yellow-hammer has many enemies: birds of prey and predatory animals alike lay in ambush for it; man persecutes it for the sake of its delicate flavour, the more so as it is easily captured. All Buntings are tamed without much trouble, and live a long time in captivity; they are pleasant companions on account of their pretty ways, and form admirable candidates for the aviary.

CHAPTER X.

THE WOOD LARK
(*Alauda arborea*).

> "What time the timid hare limps forth to feed,
> When the scared Owl skims round the grassy mead;
> Then high in air, and poised upon his wings,
> Unseen the soft, enamoured Wood Lark sings."
>
> BOLTON.

WELCKER has christened the Wood Lark "the Nightingale of the air." Hundreds of poets have sung the praises of her more fortunate sister the Sky Lark, yet no one has cast a thought on the Wood Lark but Welcker, and he is not only a poet but a naturalist. She is, however, fully as worthy of notice as the Sky Lark, aye, and to my view much more so. The pedestrian on his solitary tramp across the barren heath, finds himself in a neighbourhood with no other prospect before him than the scanty herbage which surrounds him, vainly seeking some living being amid the desert scene, when suddenly he hears from out the sky above, a sweet liquid song, beginning with a soft flute-like "Loulou," trilling to its end. The notes are few, but are combined in such a masterly manner as to form a most harmonious whole. The strain is so soft and tender, so pure, so full and round, that the wanderer unconsciously stops rivetted to the spot, while his inmost heart is charmed by the lovely songster. As it is daylight, the traveller sees the bird slowly circling higher and higher, spending half-an-hour floating in the air, and then descending to the topmost branch of some neighbouring tree to finish its song. At night also, in similar localities, he may enjoy the same, and possibly a still more delightful, serenade.

One may figure to oneself the midnight hour upon some dreary heath: in the distance the wild cry of the Longeared Owl, or the churring ditty of the Goatsucker strikes upon the ear, the solitary beetle whirrs humming past us — no other sound is heard, when the Wood Lark, rising from her dewy couch as from a dream, sings out bright and clear through the still summer midnight air, soaring upwards towards the silver stars as in the day-time she seeks the sun, pouring out her lovelorn melody from her inmost soul; the solitary traveller's spirit catches the infection and rises with it farther than the eye can follow. One must have wandered on the arid heath oneself, and have experienced the almost fearsome stillness of the barren woodland at such times, to be fully capable of appreciating the power that the song of this lovely bird has upon the human soul. The wanderer remains for some time transfixed to the spot, listening and involuntarily thinking that the bird has risen for no other purpose than to cheer his solitary tramp, greeting him with a strain that shall strengthen and comfort him on his dreary journey!

In shape, make, and colour, the Wood Lark much resembles the Sky Lark, but is distinguished from it by its smaller size, the whitish band surrounding the upper part of the head and much enlarged on the nape, its rounded wings and its habits, especially that of perching on trees, which the Sky Lark never does. The length of this bird is six inches, and its breadth from wing to wing but a trifle over a foot. Its plumage, like that of its cousin, is a red brownish gray. It is met with throughout Europe from Sweden to Greece, Dalmatia and Italy, from the borders of Asia to Spain, though in the South it is only found during the winter, where it takes refuge from the rigour of a northern climate. I have seen these birds in winter near Madrid in large flocks, sad and silent, as indeed are all birds who migrate to foreign lands. In spite of its extensive distribution it is but little known, probably owing to its affecting desert spots comparatively unfrequented by man. One may seek for it in vain amongst the fruitful fields, in broad plains, in the greenwood or in the pine forest: it lives on heaths and barren wastes, where no other songster is to be found. After the breeding season is over both young and old birds seek the new-mown meadows, and while migrating visit the fallows and stubbles of the plains, for the Wood Lark only travels in short stages of a day at a time, so as to enable it to pick up a scanty meal of small beetles and tiny seeds.

The habits of the Wood Lark would strike any one. "It is," says my father, "quick and agile in its movements, for though trustful and confiding when it meets with good treatment, it is shy and cautious if pursued and tormented, or even if in fear of molestation. It runs nimbly amongst the sparse herbage of the heath, with crest erect and the breast carried well forward, not seeking in any way to hide itself. If, however, a Sparrowhawk or Hobby makes his appearance, the Wood Lark immediately squats close to the ground in some convenient hollow, when it is with difficulty distinguished from the surrounding soil; in this manner it generally manages to elude the passing danger.

"As soon as the mountain snows have melted, which usually happens about the latter end of February, the Wood Lark returns from her wanderings in foreign lands and seeks her old home. This bird seems to be singularly sensitive to coming changes in the weather. On a March morning, amongst our snow-clad mountains, I have often heard it singing away right joyously, and have always found that the snow has melted by midday. Why then should it have mourned over the snow which covered its food in the morning? The bird was well aware that it would soon disappear, when its search for food would be no longer hindered.

"In the spring Wood Larks live in pairs; inasmuch, however, as the males are more numerous than the females, many a pitched battle takes place ere the bride is won. While pairing, the male displays his amiability to the utmost, courting the female with outspread tail and somewhat elevated crest, posturing in the prettiest manner imaginable, to show his tenderness and submission to his fair spouse.

"The Wood Lark's delicate nest is found earlier or later according to the weather, occasionally by the end of March. It is situated under a fir-tree or juniper bush, sometimes in the grass, and is placed in a slight hollow: it is built of thin dry grass stems and leaves, somewhat deeper than a hemisphere, and is very smooth inside. The eggs are gray, thickly spotted and speckled; the female alone performs the duties of incubation, during which operation she is fed assiduously by the male.

"The parent birds soon leave their first brood to shift for themselves, and commence preparations for a second instalment, after which they form themselves into a small band with their youngsters, and migrate, either in a family party or in flocks composed of two or more broods, with their parents. They leave us about the end of October or the beginning of November."

During the breeding-season the male sings most industriously, and yet his song will be heard late in the autumn. By this time almost all the other birds are silent, but the Wood Lark still pours forth his lovely strains, as though he bore an everlasting spring in his bosom. In the autumn the young males of the season also commence singing,—a fact worthy of notice,—for young Wood Larks are the only song-birds who are able, before they are many months old, to sing as well as the old birds and to perform without bungling. In desert and arid localities this bird's song takes the place of that of the nightingale, and it is rare that he who is acquainted with the lovely song of the first, ever wishes himself in the more beautiful glades where the latter reigns queen.

All bird fanciers are anxious to possess this rich songster as a companion. In the spring the Wood Lark is easily taken by means of lime-twigs attached to the branches of any small isolated bush near the bird's haunt. But its capture must be effected before love for its mate has taken too fast hold on the heart of the little songster, otherwise the poor creature will, if separated from the object of its affection, soon pine away and die. The Wood Lark may be fed on a paste composed of curds, wheaten bread, and carrots, pounded and mixed together; it is a most indefatigable songster. The cage must be covered at the top with canvas, so that when the bird is carried away by poetic fervour, and seeks to soar from its narrow habitation, it may not injure itself. This bird becomes very tame in confinement, and soon learns to recognize its master, who it lulls to slumber at night with the sweetest strains, as a reward for the care he bestows upon it. Unfortunately the Wood Lark cannot bear confinement for any great length of time, and rarely lives over two years in a cage; if, however, it is so little calculated to be kept as a caged companion, it is surely still more cruel to capture it wholesale, along with its more amenable relation the Sky Lark, for the sake of the table. The person who would take such a lovely songster for the sake of roasting it is, in my opinion, a far lower creature than the Sparrowhawk, Hobby, or other predatory animals, who make no distinction as to their prey.

CHAPTER XI.

THE YELLOW WAGTAIL
(*Motacilla sulphurea*).

> "The Wagtail flits with the Bearded Tits,
> Where the feathery reeds are growing;
> Or flirts its tail on the marsh mill-sail,
> His taste for insects showing."
>
> HENRY STEPHENSON.

THE Spaniards call the Common Wagtail the "Washer-woman,"* but they call the Yellow Wagtail "Pepita," to which indeed it has a right, the name denoting as it does, something exquisitely feminine and graceful, attributes decidedly possessed in the highest degree by this bird, and shown to greater perfection in its colouring and habits than with the common species.

The Yellow Wagtail is easily distinguishable from the allied species by its long, narrow tail, which gives the bird a slight and elegant appearance: it is ash-gray above and sulphur-yellow below; the three outermost tail-feathers are mostly white. In the spring the throat of the male is black. This description is sufficient to identify the bird by.

This bird inhabits all the mountains of Europe, as well as a portion of those of Southern Asia, besides which it is met with in the Atlas Ranges and in the Abyssinian Alps. It is not found so far to the northward as the commoner species, but, on the other hand, is met with at a greater elevation, and is but rarely seen in the plains; it is never found far from water, following as it always does the sinuosities of the stream where it has taken up its abode, and the purer the stream the more it is preferred; thus they are most addicted to mountain-rivulets, the banks of these brooks abounding in bushes and shrubs, amongst the roots of which they select a place to build their nest. In localities where the streams are frozen over, or during very severe winters, they migrate, though not far, as they easily find a suitable asylum in the South of Europe. When they do migrate they leave us late in the year, and return early in the spring, for they are hardy birds and not afraid of cold, so long as they can find sufficient nourishment.

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* In some parts of England, especially in Kent, it is called "Peggy Dish-washer."—*W. J.*

This Wagtail will be allowed by all who are acquainted with it to be an extraordinarily pretty and graceful creature,—the very gem of the stream. The Yellow Wagtail is fond of living in the neighbourhood of man, though its conduct is extremely cautious, until it is satisfied that it is safe and need fear no ill-treatment at his hand; assured of this, perfect confidence is the result; where it is preserved it becomes most fearless. It runs with rapidity, while every step is graceful; a pretty nod accompanies each one; and the long, elegant tail is jerked every now and then. If walking in the water the same grace is displayed; like a well-bred child, it is very careful not to soil its plumage or to wet its feathers, and hops with the greatest care from stone to stone: its favourite resting-places are large stones, posts, branches, &c., in elevated positions. It does not, however, remain long in one place, for its habits are active, and it is ever on the move. Its flight is light and quick, and is easily distinguished from that of other birds, by its character: it is composed of a series of arch-like sweeps, in which the bird rises and falls with a certain amount of regularity; it does not care to fly any great distance, only doing so when migrating. Its note much resembles that of the common species, except during pairing time, when the song of the male is much richer and more sonorous than that of our pied friend.

The Yellow Wagtail feeds on small insects, mollusks, and worms; ephemera, small dragonflies, midges, flies, and larvæ of all sorts, are to be found in its stomach when killed. It seeks its prey either in the water itself or on its borders.

The duties of breeding are commenced in the latter half of the month of March. The male, perched on some favourite spot, calls to his mate with trembling wings and ruffled plumage, switching his tail at the same time. Now the two playfully chase one another along the strand. Arrived at some smooth, sandy spot at the brook-side, the male runs round and round his spouse with drooping, quivering wings, wagging his tail, or carrying it outspread, until she acknowledges his tender attentions. At this season this bird's peculiar intolerance of others of its own species reaches the culminating point.

Even while pairing a suitable locality is sought where to build the nest. This is always placed near the brook, generally on the very bank itself, in some natural hole or cavity, amongst stones, old masonry or brick-work, tangled roots, in hollow trees, &c.; the size of the structure depends upon the space to be filled up. The outside of the nest is composed of small roots, fibres, grass, moss, and also of dry leaves; the interior is cup-shaped, and is lined with hair, bristles, feathers, wool, and such-like materials. The eggs, five or six in number, are very smooth and thin in the shell, somewhat short, sharp-pointed at one end, broad and round at the other; the ground a dirty, yellowish white, spotted and speckled with yellowish gray, and lighter shades intermingling with the ground. The female usually hatches out her young unaided, though the male has been found in the act of incubation. Both parents show great attachment to their offspring, and the female not unfrequently allows herself to be caught on her eggs. They are still more fond of their young, which are hatched out in about fourteen days; and after another fortnight they leave the nest, even before their tails are full grown. At first the young are fed by both parents with much assiduity, after which they teach them by degrees to feed themselves, instructing them in every way, and seeking to shield them from all possible harm. The old birds then commence making their preparations for a second brood, which is usually hatched by the beginning of June, though they often find themselves obliged to rear a young Cuckoo instead of their own offspring. The old birds are not troubled with many enemies, for the small birds' bug-bear—the Sparrowhawk—is deterred by the close proximity to their haunts, of water; and they easily escape the clutches of carnivorous mammals. Man never troubles them: he must indeed be an uncommon young scoundrel who is desirous of showing his utter worthlessness by shooting or otherwise destroying this pretty bird. The young brood, however, is surrounded by enemies of all kinds: they are often drowned by the sudden floods caused by a heavy downfall of rain; cats, martens, stoats, weasels, and rats, often destroy the young birds at the nest, whilst Crows and Magpies kill numbers of "flyers;" such persecutions prevent these elegant creatures from ever becoming very numerous.

As a cage-bird the Yellow Wagtail is unfortunately useless, as it can but ill bear confinement: one may manage by feeding them with pieces of insects to wean them by degrees to Nightingale's food, but they never live long. They are easily captured with a Nightingale-net, and without much trouble; but wherefore rob our mountain burns of such jewels? The Yellow Wagtail, like all other members of the same family, is an exceptionably useful bird, and is on that account worthy of protection.

CHAPTER XII.

THE NIGHTINGALE
(*Luscinia philomela*).

> "Sweet bird, that shunn'st the noise of folly,
> Most musical, most melancholy!
> Thee, chauntress, oft the woods among
> I woo, to hear thy even song!"
>
> MILTON.

THE Nightingale is a speaking witness of the power of poetry over the human heart: we look on her as the muse of love. Other birds, also, offer speaking testimony when they sing,—but t'is only of their own love. The Nightingale stands alone in her renown. The Spaniards call her "Ruiseñor," which means, as I have been told, king and master; titles well merited by this bird, for she is, undoubtedly, the most powerful, as well as the most beautiful and striking, of all songsters, and is on this account, in a certain sense, really a king, or rather a queen, amongst the rest, which rank far below her. No other bird's song can vie with the strains of the Nightingale: she is a poetess in the widest and most beautiful meaning of the word; she embodies in her song the thoughts and feelings, joy and pain, longing and plaint, of love, in all their inmost depth, and gives the true ring and music of that magic word. Her song flows flute-like, in one uninterrupted, clear, and even stream,—a melody by itself, inimitable and unequalled, it vies in comprehensiveness and intensity with that of the human voice, while far surpassing it in fulness and beauty of tone. Though ever-changing, it yet remains in character, for each variation is but a different expression of one and the same thought.

The bird itself is soon described: it is nearly seven inches long by ten in breadth; above, the plumage is of a dark russet-gray, and underneath, of a dirty grayish white; the tail is russet-red. Further description is unnecessary. It differs from its cousin the Philomel Nightingale (*Luscinia major*) principally in being smaller, and in the absence of the spots on the throat. During the summer months it inhabits Central and Southern Europe and a large portion of Asia, migrating as far as the interior of Africa. It generally comes to us by the middle of April, remaining until the middle of August. It prefers the plain to the mountain, and the larger to the smaller woods. In pine forests it is wholly wanting. It is especially fond of forest lowlands intersected with rivulets and well furnished with plenty of underwood. Each pair occupies a very small area, so much so, that it is possible for a person to hear fifty Nightingales singing at one time, for if they once take to a locality, they frequent it in large numbers.

The Nightingale is a serious, thoughtful, and proud bird, by which attributes it is distinguished from all other German songsters. It trusts man so implicitly that it is almost sure to fall a victim to his treachery, hence we have ample opportunity to watch its habits. It usually perches at about the height of a man from the ground, carrying its wings carelessly, the tail being moved when much excited. When on the ground it stands very upright, and hops with great springs from the spot. Its flight is light and rapid, though in the daytime, when left undisturbed, or even when chasing a rival, it rarely flies more than a couple of hundred yards.

Its food, consisting of earth-worms and insects or their larvæ, is principally sought for on the ground; at all events it only occasionally snaps up a caterpillar, beetle, or butterfly, from off a leaf or twig. Its favourite nourishment is ants'-eggs; and when fruit is ripe it will also eat that, besides berries,—such as currants, alder- and elder-berries. Water is a necessity, for after every hearty meal it immediately goes and drinks. When the weather is warm it takes a bath every day. In captivity it is fed on a preparation composed of carrots, wheaten bread, curds, ants'-eggs, and meal-worms; great care must, however, be taken if one would keep the bird any length of time.

As soon as the Nightingales return from their winter quarters each pair seeks its old home, defending it in the most determined manner against all intruders. Birds of the previous year find much difficulty in procuring a suitable resting-place; and bachelors have still greater obstacles to overcome, for they must fight for a home as well as a partner. They will sing almost uninterruptedly, both night and day, to seduce a neighbouring hen bird from her allegiance. Old pairs begin to build their nest soon after their arrival, and sing away more assiduously than ever.

The song of the Nightingale is in every respect the very poetry of sound, and must have been personally heard and taken to heart if one would form any idea of the power it exercises. The lovely strains of the "Queen of the Night" are so indescribably full in tone, charming in grace and purity, and marvellous in their variety, power, and volume, as entirely to surpass those of any other bird: soft, flute-like strophes alternate with the loud and ringing, the plaintive with the gay, mingling together in one sublime and ever-varying succession; power is accompanied by grace and euphony, which are combined with fulness and purity; the whole forming a gift of melody unequalled for richness and the thousand and one various strophes with which it is adorned. Thus the song of the Nightingale is a well-known poem, yet ever new, one of which every stanza seems so beautiful in our ears as to obliterate all those that have gone before, so that the strain present to our ear rivets the soul, and still leaves us eager for what may follow.

When the shades of night have fallen, and moonbeams silver every leaf and flower; when all other birds are wrapt in silent slumber, and no breath of air disturbs the stillness of the midnight hour, and the Nightingale fulfils the promise of her name; when no single note of her heaven-born melody escapes the eager, listening ear;—then must every human heart bow down before the power which poetry exercises over its more material being; then is one forced to recognize that our beauteous earth, so railed at by the hyper-orthodox, is gifted with music and poetry from heaven above, for at such a moment all the brilliant beauty of the blissful month of May may be said to inundate the heart in one long, deep draught of pleasure.

That such a song cannot be reproduced is patent to everyone who has ever heard a Nighingale sing; nevertheless, Bechstein gives us an imitation so ingenious and passable that we give it at length :—

> "Tiuu tiuu tiuu tiuu,
> Spe tiu squa,
> Tiō, tiō tiō tio tio tio tio tio tix,
> Qutio qutio qutio qutio,
> Zquō zquō zquō zquō,
> Tzü tzü tzü tzü tzü tzü tzü tzü tzü tzi,
> Quorror tiu squa pipiquisi,
> Zozozozozozozozozozozozo zirrhading!
> Tsisisi tsisisisisisisi,
> Zorre zorre zorre zorre hi;
> Zatn zatn zatn zatn zatn zatn zatn zatn zi,
> Dlo dlo dlo dlo dlo dlo dlo dlo dlo dlo,
> Quio tr rrrrrrr itz
> Lü lü lü lü ly ly ly ly lî lî lî lî
> Quio didl li lülyli
> Ha gürr gürr quipio!
> Qui qui qui qui qi qi qi qi gi gi gi gi;
> Goll goll goll goll gia hadodoi
> Quigi horr ha diadiadillsi!
> Hezezezezezezezezezezezezezezezezeze quarrhozehoi;
> Quia quia quia quia quia quia quia quia ti;
> Qi qi qi jo jo jo jojojo qi—
> Lü ly li le lä la lö lo didl io quia
> Higai gai gai gai gai gai giagiagiagia
> Quior ziozio pi!"*

All these, as well as a hundred other inexpressible sounds, serve to express the joyous, happy love of the Nightingale, and are mostly sung in honour of the female, or as a challenge to a rival. The song of an old bird is always richer and more finished than that of a younger one, and every locality has its peculiar strain, for the song is inherited by the young birds from the finest performers of each district. Let any Nightingale sing as it may, it always throws all other song-birds in the shade, even though they imitate some few of its notes: thus my pets, the Song Thrushes, in the pine forests, near Leipzig, often render whole strophes of the Nightingale's song, which they have undoubtedly filched from that bird, with great exactitude. The worth of a Nightingale is greatly enhanced by its assiduously singing during the night, an accomplishment by no means common to every individual, and generally limited to the best performers: these are real treasures to the neighbourhood, and the pity is, that the song of the Nightingale lasts so short a time in its full purity. Unfortunately, these wonderful songsters usually become silent about Midsummer-day. Thus, in our neighbourhood, May is the only month to whose thousand beauties is added that of the Nightingale's song.

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* Pronounced as in German.—*W. J.*

The nest of this bird is a very simple structure, and is generally placed just above or on the ground, amongst thick shrubs, under a tuft of grass, or in the herbage at the foot of the trunk of a tree.* It is principally composed of dead leaves, dry twigs, and haulm, lined inside with fine grass-stalks. In the beginning of May the female lays four or five eggs: these are rather large and smooth-shelled, of a pale sea-green, minutely and closely stippled with gray-brown. Male and female sit alternately for fourteen days, and rear their young together: the latter are fledged in about three weeks, after which the males begin to practise singing, taking their lesson from the father. Unfortunately, like other young birds, they are subject to an infinity of dangers, and only too many fall victims to birds of prey and rapacious mammals. With us they are only captured for the cage. Spaniards and Italians, however, like the ancient Romans, do not even spare the Nightingale, but offer it up, along with other song-birds, to their gluttonous appetites. Fortunately, many, somehow or another, manage to escape, and enjoy an existence which we might well envy them, so much purer is it than our own.

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* I have seen a Nightingale's nest, in an ivy-covered tree, ten feet from the ground.—*W. J.*

CHAPTER XIII.

THE BLACKCAP

(*Curruca atricapilla*).

> "Schwarzplättchen wird nach kurzer Frist,
> So viel es nur vermag,
> Erlustigen die Hörer all
> Mit lautem Trillerschlag."
>
> VOGL.

When, by the end of April, the feathered choristers have sought the fresh, green glades of wood and forest, there is one amongst them whose splendid song astonishes the hearer by its fulness, power, and variety. One would fancy at times that it must be the Nightingale who is performing, and vainly seek to discover the individual; if, however, the rich notes are carefully followed up, the songster may be found, one indeed of the best of the woodland warblers,—the Blackcap. He looks simple and modest enough in his sober suit of gray with a black cap, yet he carries in his little breast a treasure of melody. The end of each strophe is especially brilliant; it is a long-sustained trill, which a good songster, when thoroughly inspired, repeats three or four times in succession. This warbler, too, begins, as it were, to sing in earnest only when most other songsters have become all but silent. He is heard as late as July, while the young males of the year already begin to try their hands at singing in August and September.

The Blackcap, inhabiting the whole of Central Europe, frequents alike, pine forest, greenwood, grove, and garden; and everyone who knows the bird, appreciates its value. Its habits much resemble those of the Whitethroat, denoting its close relationship with that species. But rarely still, it hops from twig to twig with lightness and activity, creeping amongst trees and bushes with its breast well lowered, spying right and left, jerking its tail, and slowly raising the feathers of the head, if it sees anything alarming, until satisfied. In the morning hours the Blackcap is fond of sunning itself on some open branch or twig; at other times it creeps and crawls incessantly amongst the thickest bushes. It shows no fear of man, but, on the contrary, looks upon him rather as a protector, in whom it can put trust; it also lives on the best of terms with other animals. It feeds, as do the rest of its genus, on insects of every description and in every stage of development,—such as small beetles, butterflies, flies, gnats, caterpillars, and the like; besides these it is very fond of all kinds of berries, for which it hunts with assiduity,—such as bird-cherries, currants, elderberries, raspberries, blackberries, the fruit of the mountain-ash, &c.; it will even swallow the poisonous kernels of some berries with impunity, because they are cast up again as soon as the fleshy portions are digested.

The Blackcap builds its artless nest in the month of May: constructed of dead grass, it is placed amongst bushes, and but ill-concealed from view; indeed, it is more often very much exposed, and rarely is above the height of a man from the ground. When the nest is completed the female lays from four to five eggs, flesh-coloured, spotted with red, and occasionally streaked or marbled. Both the male and female sit by turns, and the young are hatched out in from twelve to thirteen days. Fifteen days later the nestlings are fledged, after which they are cared for and instructed by the parent birds for a short time longer, when the latter not unfrequently make preparations for building another nest. The moulting season commences in August, sometimes as early as the end of July, and is the only season during which this industrious singer is silent. As soon as this is past it immediately recommences, if not to sing, to give utterance to short strophes of its song. In the autumn both old and young are more frequently found in gardens than in the spring of the year, seeking the elder-trees, whose juicy berries are then their favourite food. The Blackcap often remains in Germany till the end of October, when it starts for its winter's quarters. We do not know how far this bird travels: possibly it remains in Spain—at least it may be heard singing in the Alhambra, as late as December.

This harmless bird is easily shot or trapped; in the latter case, with nets baited with meal-worms. It is one of the most charming and grateful cage-birds which one can keep. One of our best observers, Count Gourcy-Droitaumont, writes as follows:—"This bird is one of the best songsters we have, and is, as a cage-bird, in my opinion, far superior to any Nightingale. Its long and continuous strains are more varied and flute-like, and at the same time less shrill and ringing than those of the Philomel and Common Nightingales, portions of whose songs it intermingles with its own to a very great extent. Some Blackcaps pronounce the words 'judith' and 'brief' as plainly as only a Philomel Nightingale can; others imitate the song of the Garden Warbler, the whistle of the Oriole, and the strain of the Chaffinch, in the most admirable manner; others, again, intermingle with their own song those of the Blackbird and Redstart, and also the call of the Quail. It is beautiful, indeed, to hear so small a bird bring out the 'taack, taack,' of the Blackbird, right deep and loud. There are some Blackcaps who sing all these variations, as well as their whole song, almost as loudly as the refrain at the end."

The Blackcap is easily tamed, and becomes greatly attached to its master. It will greet him with a song as he approaches, or when called upon; it will even continue to sing undisturbed while being removed, cage and all, from one place to another. Inasmuch as this bird is easily kept, feeds willingly on berries and even potatoes, and will live for years in confinement, it is an especial favourite with "fanciers." I recommend everyone who is really fond of such an exquisitely melodious companion to obtain one if possible, and am convinced that he will never regret having done so. If the reader perchance resides in the country or near a large garden, and has made this bird his friend, let him teach his children, and everyone else, to protect both bird and nest, preserving them from vermin and the attacks of mischievous boys.

CHAPTER XIV.

THE MELODIOUS WILLOW WARBLER[*]

(*Hypolais hortensis*, auct.)

> "That cheerful one who knoweth all
> The songs of all the winged choristers,
> And in one sequence of melodious sounds
> Pours all its music."
>
> SOUTHEY.

ONE well-known species has of late been separated from the small group of true warblers. It is a pretty little creature, greenish on the upper parts, and brightish yellow underneath. Its true home is Central Europe, as far north as Sweden, whilst in the south it is replaced by other, but closely-allied, species. A bird of passage, it appears with us by the end of April or beginning of May, leaving again in the commencement of August. It is much more common in the lowlands than on the mountain side, though found on all intermediate elevations. It prefers copses and large gardens rather than woods, and though never met with in pine or fir woods it is very common where fir and pine are intermingled with the greenwood. It is fond of living in the neighbourhood of man, and is therefore often seen in small gardens, even in the midst of towns.

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[*] Brehm calls, or rather miscalls, this species by the following names,—*Hypolais hortensis, alticeps, media* and *planiceps*,—whereas the correct name is *Hypolais icterina*. I am indebted for this information to Mr. H. E. Dresser. My friend Mr. R. B. Sharpe, of the British Museum, also called my attention to this error on the part of Brehm. The German names are as follows:—Gartensänger, Bastardnachtigall, Gelbbrust, Spottvogel, Spötterling.—*W. J.*

The versatile talent of this bird stamps it at once as one of the most agreeable songsters we have. It is rarely still, always joyous, and ever ready to sing. Perched on a twig, this bird often sits bolt upright, raising the feathers of the head on perceiving anything out of the common, which gives it a serious appearance. It creeps and climbs nimbly through the thickest bushes, and flies actively from tree to tree; it accomplishes the boldest twists and turns with ease, always rendering itself conspicuous to the observer. This bird's call-note is like a smack of the tongue, though softer than that of the Blackcap, sounding like "deck, deck, deck," or "deck derüt," &c. When squabbling it gives out a loud "heydedeyteyt," and quacks when frightened. These different sounds are heard almost without intermission, and but for its beautiful song would render the bird disagreeable.

The male is not only one of the best, but also one of the most industrious of songsters: he commences singing at dawn, and continues performing the whole forenoon; then he rests awhile, and sings again from the afternoon to sundown. The song is a flowing allegro, replete with the most graceful turns, though not to be compared with that of the Nightingale. The Melodious Willow Warbler also mimics all sorts of strange sounds in the most comical manner, as well as strophes of other birds. He will imitate the song of the Swallow, the Starling, and in wet localities the cries of different water- and marsh-birds. In short, it is a real pleasure to listen to him. Unfortunately he sings but for a short time, at the outside up to

Midsummer, and is silent also when assisting his spouse in the duties of incubation.

The Melodious Willow Warbler is very difficult to keep in captivity, for it is tender in the extreme, more so, perhaps, than any other species. Much pains has been taken to try and tame this bird, but it has rarely been brought so far as to take kindly to cage-food, and even when this point has been gained it seldom lives very long. The most trifling accident will kill it,—such as cold, want of attention, stale food, &c.,—added to which it will beat itself to death, when first caught, if its wings are not tied.

In its natural state the Melodious Willow Warbler feeds on all sorts of winged insects, as gnats, flies, moths, and also spiders: most of these are generally taken on the wing, though it will also pick them off leaves, and destroy numberless plant-lice. When cherries are ripe it will eat a few, and at that season frequents cherry-trees with great assiduity; it has a relish for currants, nor does it despise other berries. In captivity it must be fed with ants'-eggs and meal-worms, until it becomes gradually accustomed to ordinary Nightingale's food.

The Melodious Willow Warbler breeds in gardens, especially in overgrown orchards. The nest is found in bushes of average height, rarely on the tops of high trees, like that of its southern representative; it is never very much hidden from sight, though usually placed amongst the thick leaves; it is generally placed in the fork of a branch, or at all events interwoven with other twigs. The nest is one of the prettiest we have: it is almost always spherical, and exceedingly neatly constructed; the materials are tender dead grass-stalks and leaves, cocoons, caterpillars'- and spiders'-webs, small pieces of paper, birch-bark, cotton from the willow and the poplar, hair, fibres of tow, and such-like substances. The eggs, four or five in number, are laid in June: they are tender in the shell, and of a pale rose reddish colour, spotted with small and larger black spots; they are hatched in thirteen days, both parents incubating. The young remain in the nest until they are as large as the old birds, and are fed by the latter with the most delicate insects. In localities where the Melodious Willow Warbler* is accustomed to man's presence it does not show the slightest shyness, allowing him to pass to and fro under the nest without taking any notice of him; in other cases it utters an anxious cry if the nest be approached.

These pretty birds have, unfortunately, numerous enemies. Their brood is persecuted by martens, field-mice, Magpies, and Jays; the Butcher-birds take the young from the nest, and they are but too often killed by Hawks. They are easily shot, but are trapped or netted with difficulty, for they will move nooses, lime-twigs, and the like, with the greatest cleverness,—from the neighbourhood of the nest even,—without being taken.

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* In other parts of this work, where the term Garden Warbler is used, the Melodious Willow Warbler is most probably the species indicated.—*W. J.*

CHAPTER XV.

THE DUSKY CHAT

(*Saxicola leucura*).

"Whose house I have made the wilderness, and the barren land his dwellings."—*Job* xxxix. 6.

When the traveller has been sailing for days together, on the "Ship of the Desert," over the sandy waste, and imagines that all animated nature is dead, his eye will rest with intense pleasure on one of those little birds whose true home is indeed the wilderness: it is a Stonechat, whose genus is so rich in different species, one of which is ever recurring in our German fatherland, though most members of the family inhabit the South. The further one penetrates the barren country the more common these birds become. In the desert itself one meets with nearly a dozen different species, especially during the winter season, when every third bird that one sees is a Chat; and the handsomest amongst these I hold to be a coal-black little gentleman, with a dazzlingly white tail traversed by a single black bar.

The Dusky Chat inhabits the south of Europe, Spain especially; it is replaced in Upper Egypt and Nubia by another allied species, much resembling it in colour. A single pair of these birds will enliven the most barren hill-side; indeed, the male is a most charming little fellow. Now he is seen dancing, or rather tripping it on the top of a stone, as though he had taken lessons from the Black Cock; now he vanishes out of sight in a crevice or under some boulder, or sings, rising in the air, whence he gently descends on outspread pinions, or struts up and down before his partner. His pretty song is heard incessantly; the poetic fervour within him, as in the Lark, tempts him to soar heavenward, though love to his mate soon brings him back to the rock, where he breathes out the last strophe of his song to his spouse, who sits by him delighted to listen. He is unremitting in his endeavours to seek some novel pose or antic, though he never omits to show off his especial beauty—his brilliant white tail—to the best advantage. He only rests, if such an ever mobile being can be said to do so, upon the highest available point of the beat or locality which he frequents. Devoid of fear he seeks the boundary-walls of the mountain-towns or villages, bowing and bobbing on wall or roof like a Redstart. I have often wondered that this bird, in particular, has never been noticed by travellers, an oversight which most clearly proves to me the truth of the old Bible saying: "Eyes have ye, and ye see not!" for I cannot understand how such a restless being does not strike every passer-by.

To this species is assigned the realm of boulders and barren rocks, as is indeed the case with the whole of the genus, so that it is only met with after we have left the fruitful hills and dales far behind us. Whoever in Spain has quitted the grass-green plains, intersected by a stream subdivided into a thousand silver threads, which change that rich land into the blooming "Vega," and wends his way towards the mountains, steps suddenly, as in Egypt, into a desert, upon whose hard, gritty soil only here and there a tiny plant is to be seen, fearing at the same time that even this small speck of verdure will in a little time fall a prey to the fervent rays of a torrid sun. He may, perchance, see a few Vultures, or even an Eagle, gliding over the mountains, perhaps a Rock Sparrow or two, or a few Swallows may be seen,—otherwise all is as still as death. A bright lively strain suddenly causes the traveller to turn his eyes to a particular spot: the Dusky Chat has commenced his cheery ditty, and with it the dreary hill-side becomes animated, and the solitary wanderer the same. "After him!" is now the word; and away clambers our pedestrian over boulder and rock; in full pursuit reckless springs are made, but to little purpose,—the bird is more active than man. Regardless of the streaming perspiration the hunter continues his wild chase up the mountain side, the bonny bird ever in advance, singing, dancing, hopping, and flying, playing its antics, laughing in its sleeve at the futile efforts of his heavy pursuer, and amused that he should thus dare to seek out so active a creature in its native haunts. It is, however, in such a ramble that one can best observe the habits and ways of this charming little bird.

Each pair inhabits a particular portion of the mountain, and the wilder it is, and the blacker the stones and boulders, the more certain one is to find it. The Dusky Chat likes the neighbourhood of the prickly-pear, and fearlessly seeks those retreats where it knows it is safe. What a jolly life! Both birds are always on the move, picking up here a beetle, there a small worm; now catching a butterfly on the wing, or quickly pursuing some active grasshopper; now the male sings a snatch, or dances a minuet after his own fashion; and then the pair chase one another up and down. With all this they do not spend the day regardless of what is going on around them, but see and watch everything, especially whatever betokens danger. If a bird of prey appears they immediately hide away in some crevice, or vanish in safety under a rock; but ere long a little black head may be seen peering from out the rift, on the watch, to see if the danger be past; and then the old game recommences *de novo*.

It is really pretty to see how the pair behave at the nest. The Dusky Chat builds rather late in the season, say the middle or end of April, or even the beginning of May. Suitable places are indeed not wanting, for he is everywhere sure to find some rent or hollow in the perpendicular wall of rock which is not occupied by the Rock Sparrow, and which he can make use of. The nest is built with a view to accommodating a numerous progeny: it is large, and formed of grass, haulm, and small roots, closely interwoven together, the interior being carefully lined with goats'-hair. The eggs it contains usually number from four to five, though six and seven are not uncommonly met with in one nest.

I found such a nest in the Sierra de los Anches, in Murcia. It was placed in a largish hole, formed by the crumbling away of the rock, on a broad boulder overhanging like a cornice: the spot was well chosen, and to the purpose. These deserts amongst the mountains are rarely visited by man, still the clever little creature had overlooked the fact that the hole could be easily reached. The nest contained five unfledged young ones, of whose identity I was not long left in doubt, as before I had finished my examination both the old birds appeared on the scene with food: it had never hitherto been my good fortune, even from the closest hiding-place, to see this charming bird so near to me as on this occasion. Both parents, though usually so shy, seemed to lose all sense of danger: on either side sat the male and female at the distance of hardly fifteen paces; the latter flew anxiously from rock to rock, while the former remained perched on one spot, but sang—poor little thing!—as though begging me to take my departure, tripped backwards and forwards, danced, and then sang again. The scene was truly touching: on the one side the female getting more and more anxious every moment, while on the other sat the male, who, in his trouble, scarce knew what to do to be rid of the dangerous enemy. Shall I kill you, poor little creature? No, never! "Wait a moment while I leave you room to go to your offspring; after I am gone, there is little fear that anyone else will ever disturb you." So said I to myself, and then departed; a bright song of thanksgiving fell upon my ear: this, thought I, is my reward.

I then dreamt to myself again, further out into the future. I pictured, in my imagination, the parents taking their newly-fledged brood for their first flight, all safe and sound: father and mother flying before the joyous band, from stone to stone and rock to rock. They scarcely require to be shown their domain, for the little short-tailed scamps seem perfectly at home from the very beginning. The parents need only utter one warning cry and in an instant the whole family have vanished amongst the crevices of the rocks or under the boulders; a moment after, however, on the parents uttering a different note, they are again assembled on the highest points and corners of the surrounding stones: the enemy, seen by the watchful parents, has either passed over or hid himself; there is, apparently, no further danger, and all is as gay again as ever. Father and mother continue their chase after insects, and rarely fail to capture the prey they have once set eyes upon. Look! the father has just caught a butterfly in full view of the whole tribe of youngsters; and now each member strives to be the first to bag the morsel. There they go! never was there such running, scrambling, piping, and begging; even the half-fledged wings are used to the utmost: right you are, that black little male, who has all along been first in the race, wins the prize. When, lo! the head of the enemy is again seen to peer up from behind a rock: one call from the father, and not a youngster is to be seen!

In this way the little band remain under the tender care and protection of the parent birds until the moulting season is past, and then they all separate, for each one has found a partner. The moult takes place in July, August, and September; by the end of October or the beginning of November all have paired, and the family is broken up, though they will still keep in company with other pairs. In January they have already begun to sing a good deal, and by February they are in full song. The strain is wonderfully like that of the Blue Thrush, and might be mistaken for it, but that it is not so loud or ringing, and ends with a peculiar rattle, like that of our Black Redstart.

The name of the Dusky Chat ought not to be omitted from the list of the characteristic birds of Spain. This bird is peculiar to the South, and belongs as much to its mountains as do the stones and rocks which form them. As before remarked, it prefers dark to light stones, and knows that it is part and parcel, so to speak, of the former. The mountains of Spain are beautiful,—grand in their way,—but will not bear comparison with those of the North: they are rarely clothed with the living forest, and are never bedecked with green turf like ours; the light of heaven alone lends to them their radiant tints, softened by the misty distance; their rocks and boulders are their only decoration; their form is always impressive, and each portion is splendid in its wild and desert beauty. Man all the better appreciates the restless, active life he sees amongst them.

Our German Stone Chat resembles, in many respects, the foregoing species: he also is sharp, cautious, and shy. He frequents stone-quarries, fields surrounded by loosely-built rough stone-walls, vineyards, and rocky mountains, and is easily recognizable at a distance by his constant bobbing and bowing. Like his dusky cousin, he is ever on the move, and knows how to enliven the desert landscape, though he cannot be compared with the former species. Besides this, he is forced to migrate southward to escape the rigour of our northern winters, whereas the Dusky Chat remains the whole year round under the milder skies of Spain.

Both species are highly useful birds, and merit protection at the hands of every sane person.

CHAPTER XVI.

THE COMMON WREN.

(*Troglodytes domesticus*).

> "The little woodland dwarf, the tiny wren,
> That from the root-sprigs trills her ditty clear;
> Of stature most diminutive herself,
> Not so her wondrous house; for strange to tell,
> Hers is the largest structure that is formed
> By tuneful bill and breast."
>
> GRAHAME.

OF all our feathered songsters there is scarcely any other that is so faithful a companion to us in winter and summer, in frost or sunshine, as our tiny russet friend the Wren; scarcely any other which accompanies man so far north or south, or is so typical of cheerfulness and never-failing good humour as this friend of our childhood, youth and old age. He sings and flits joyously round the human abode alike in Russia and in Spain, in Greece or in Iceland; he is found all over Europe, and is universally the friendly companion of man. More constant than the Swallow, he does not pay us merely a passing visit, but is ever with us, long after the former has deserted us and is sunning herself in southern climes. The pet of every nation to whom he is familiar, the Wren is treasured, or at all events tolerated, everywhere, for he understands the road to our hearts and how to win our warmest affection.

It is needless for me to describe this bird, as every one knows him from earliest childhood, and has seen him hundreds of times gliding through the bushes as quick as any mouse, ever joyous, ever moving, always ready for a song, cheery and happy. He often comes into the farmyard, perches himself on some prominent point, and sings a few rapid strophes; in an instant he vanishes from sight, but only to repeat the same manœuvre as quickly elsewhere. Such is his life day by day, and from year's end to year's end!

Most assuredly every one knows our little friend by sight, or from his song, or by tradition. Popular poetry sings his praises in a hundred ways. In my native land we call him the "Snow King,"—who could not understand this title! A king in the snow—a king indeed—even when the bitter winter covers his table with a snow-wreath and hides his very food from sight; a king, I say again, and a rich one too, because his happy nature lets him sing and rejoice over the little that is left him!

The literature of our land is replete with poems in his praise, singing of his sociability towards the human race, his contented and joyous nature.

The Wren lives in pairs, almost all over Europe. In Germany it is always to be met with in thick hedges, or water-courses roughly clad with roots and bushes. The density of its plumage enables the bird to defy the utmost cold, and it is only when a very deep snow deprives it of nourishment that it falls a victim to the vicissitudes of the winter season. It lives principally on or near the ground, running like a mouse, and creeping through the hedges while capturing its food with the greatest activity: this chiefly consists of insects and their larvæ and eggs, which it picks dexterously from out of cracks and crevices or dead wood, spying out the most hidden nooks and corners; it is also fond of small seeds. The pair keep faithfully together; but occasionally this species is met with in small companies or bands. When the male sings—and that is every minute almost, though less often in winter than in the spring—he leaves the ground and perches himself on the most prominent twig of some bush. The strain is simple, but pleasant and very powerful; one would hardly credit that so clear and ringing a song could proceed from so tiny a throat: while singing, his movements are graceful and pretty in the extreme, and the stumpy tail is often outspread.

Each pair breeds twice a year, and builds a splendid nest, which is disproportionately large. It is usually placed in a cavity in the ground, under some overhanging turf or stump of a tree, amongst roots, and in other similar localities.* It fills the hollow in which it is placed to a nicety, is domed over and provided with an entrance hole. The wondrous little architect mostly uses moss as building material, and always selects it with the greatest care, only using that kind which is to be found in the immediate vicinity of the nest. This trustful little creature will even build its nest amid the bustle of human life. A pair of these birds has been known to build in a triumphal arch over a school door, in spite of the daily passing to and fro of the noisy tribe of children. Unpaired males have also been known to build nests and sing away as joyously as though they had a loving partner by their side! Such "Hermits," as the country people call them, are not usually adepts in the art of construction; the particular male to which I now refer did not even take the trouble to build a nest for himself, but took possession of a forsaken Swallow's nest, enlarging it with hay and straw instead of moss. He was six weeks engaged on this work of art! . . .

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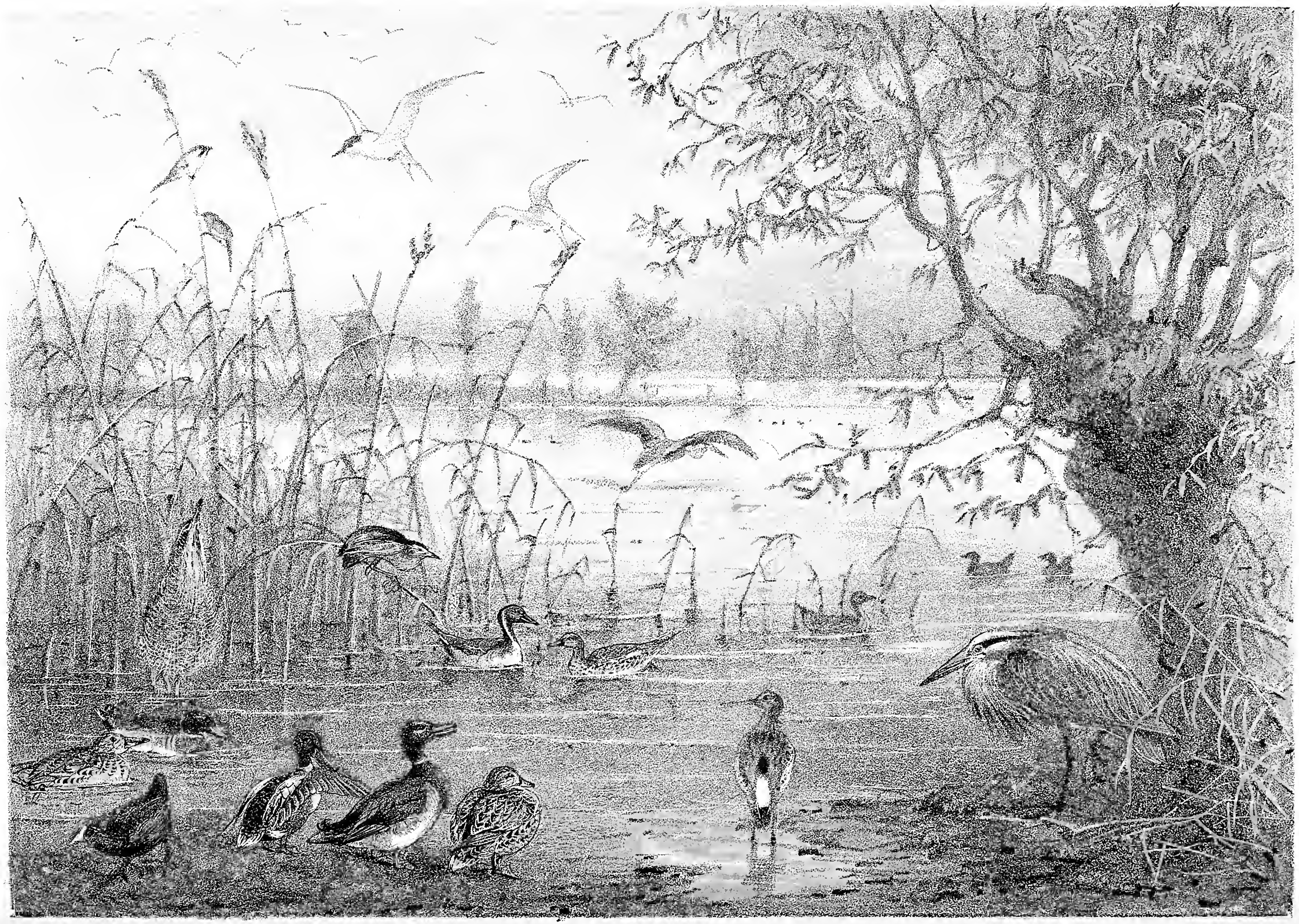
* In England this bright little bird nests in almost every out-house or summer-house which may happen to be furnished with a thatch-roof.—*W. J.*

In April and July the female lays from six to eleven eggs in her warm nest; these are white, sparsely and finely speckled with red, and are hatched in from twelve to thirteen days, the female alone performing the duties of incubation, during which time, however, she is fed by the male, who also faithfully assists her in rearing the young ones. When the nestlings are fledged the family remains for some time in company, after which the old birds either prepare for a second brood or leave the youngsters to shift for themselves.

The Wren is easily caught, but is difficult to keep in confinement and accustom to artificial food. If, however, one is fortunate enough to succeed, a tenant is secured for the aviary, which delights the eye by its pretty ways, as well as the ear by its song. The latter sounds at a distance like that of a soft-singing Canary, and has in the middle of the strophe and at its end, a fine flute-like trill. Unfortunately, in captivity, the Wren does not sing so persistently as in a wild state, and on this account, though much may be said in favour of keeping this little fellow in a cage, and having him always by one, it is far more agreeable to watch him flying around the house, especially in the winter; for the "King in the Snow" only shows himself in the full perfection of his grace and joyousness, when out of doors!



J.G.Keulemans. lith.

M & N.Hanhart. imp.

WATERFOWL ON A DUTCH LAKE.

PART VIII.

SKETCHES FROM NATURE.

(Continued.)

CHAPTER I.

THE DIPPER, OR WATER OUZEL (*Cinclus aquaticus*).

> "He has no fellowship with waving woods,—
> He joins not in their merry minstrelsy,—
> But flits from ledge to ledge, and through the day
> Sings to the highland waterfall,—that speaks
> To him in strains he loves, and lists
> For ever."
>
> N. T. Carrington.

It is terribly cold: wood, field, and heath are all covered with snow; lakes and ponds coated with ice; the wild mountain-torrent alone defies the icy fetters of winter, to which it is not yet entirely a slave; here and there open spots of rippling or foaming water are still to be seen; all around is desert and silent,—one can scarcely hear the light twitter of the Titmice and Goldcrests as they flit actively from tree to tree and branch to branch in search of food. All at once the wanderer will, if he follows the stream, hear a curious song, full in its character, and made up of low, creaking, twittering and clear whistling notes, intermingled with strophes sung alternately loud and soft, so that the entire song might almost be called a chatter: it is so bright and cheery, however, that one is glad to hear it, and feels a wish to become closer acquainted with the chatterer who can sing defiance to such wretchedly inclement weather. Anyone blessed with a sharp eye will soon discover the songster, though an unpractised hand or short-sighted person may look a long time before he sees him, ensconced where least expected. Close to the edge of the open water, on a block of ice or in a hollow amongst the stones, may be seen sitting, a pretty, grayish bird with a dazzling white breast, which, though only half concealed, so matches the colouring which surrounds it that it can scarcely be distinguished. This bird is about the size of a Starling, on which account it is sometimes called the Water Starling in Germany; in form it has some resemblance to the Thrushes, hence it is occasionally named Water Thrush or Water Ouzel, though in reality it differs so essentially from either Starling or Thrush that it cannot in any way be confounded, by a careful observer, with either of them. There is only one bird to which it may be compared, and that is the Wren. The shape is the same; and the bright ways, cheery courage, and contented mien of the Dipper, are also identical with those of the Wren. The one is "king of the hedge," and the other "king of the mountain burn."

Few birds show so much activity and mobility as does the Dipper: it cannot remain still even for a moment, and when it appears to be so, it is either turning its head or raising and lowering its little bit of a tail. Usually, however, it rarely remains perched long on the same spot: sometimes it is seen running with rapid steps over the most slippery of ice-hummocks; at others it dives head first into the clear liquid wave, passing some considerable time below, now running on the bottom, now swimming for some distance even underneath the ice; at other times it races rapidly along the strand, spying out the crevices, stopping a few seconds at each, for it is almost sure to find something in every cranny; it then rises suddenly in the air, and shoots forward with a whirring beat of the wings straight ahead and close over the surface of the water in search of some further discovery. Though not belonging to the swimmers, it still unhesitatingly plunges into the wildest eddy or fall, amid the foam, with the greatest possible indifference, as though it despised the threatening aspect of the raging flood by which it is surrounded; it is no diver, and yet can dive with the best of them; it is not a runner, still it can vie with the Quail in speed of foot; it is not a flyer in the usual sense of the word, but for all that it can fly with such rapidity as to require a practised shot to drop it when on the wing. Brisk, active, quick, observant and cautious, it is ever on the move; its keen eye is always on the look out far and near, all enemies are noticed, and from every danger it finds a means to escape; ruthless man alone, is able to get the best of it, and that by means of his gun, whose deadly charge strikes from afar; otherwise there is scarcely a creature capable of capturing this little being, the friend of the flood, which is ever ready to afford it protection.

Our Dipper inhabits the mountains of the Old World, and is found everywhere where crystal streams and foaming torrents abound: the Swiss alps, the mountains of Scandinavia, the Pyrenees, the Carpathians, and our German ranges, are its true home. I have found it in the Sierra Nevada as high as seven thousand feet above the level of the sea, and my friend Georgy tells me it has been found hunting for prey even amongst the rifts and crevasses of the Glaciers. This bird is fond of trout-streams, for they are generally pure, clear mountain burns. In these localities it lives the whole year round without changing its haunts; hermit-like, not associating with its kind, unless it be with the female. The young birds even are driven off by their parents as soon as they are able to shift for themselves. The Dipper is, so to speak, part and parcel of the stream: our aquatic friend does not trouble himself in the least about what goes on either to the right or the left of it; his life commences, is passed, and ends, either close by or in the water; he traverses his beat to and fro with the restless activity we have before mentioned, up and down from boundary to boundary. Prominent boulders, and, in winter, blocks of ice, holes in the over-hanging banks, &c., are the Water Ouzel's resting-places; trees never: here it sits looking around on all sides; quietly left to itself it watches with anxious care alike the surface and the depths below, until it spies some morsel worthy of its notice, when it darts with the rapidity of lightning into the water beneath, diving, wading, or swimming, as best suits it. It will either fly, swim, wade, or run, through the wildest waterfall from below upwards; it matters little to this bird whether it walks on the bottom, or, using its wings as fins, swims through the pool. It can remain for nearly two minutes under water, and at the same time devours everything eatable that it finds there, or what is brought down by the current,—insects in all stages, gnats, midges, small beetles, and little worms of all sorts. It has been accused of destroying fish, or rather their spawn, but no observer has as yet *proved* this to be correct. The Dipper prefers brooks bordered with trees, on account of the numerous insects which fall from them into the water, where it seeks food.

The Dipper is in every way excellently adapted for the capture of its food: it darts upon its prey unawares; its very colouring tends to this purpose; its snow-white breast is like the balls of foam; the brownish red of the belly resembles the stones at the bottom of the brook; the bluish gray of the back, the water; whilst the head and neck closely imitate the tints of the boughs, roots, and stones; added to which the bird is enveloped in a coat of feathers, so compact as to defy the penetrating powers of the element it inhabits. Thus armed it needs no art to capture its prey, especially when the bird's extreme activity in the water is taken into consideration. Thus the Dipper is never in want of food; even in the hardest winter it can always find sufficient for its modest requirements.

If suddenly surprised it generally darts into the water like a frog, swims along the bottom for some distance, and then rising to the surface to breathe, looks around, when, if not satisfied that the object of its distrust has departed, it dives again, and swims still further on, till it climbs up suddenly on to a stone, and either pursues its road on the wing or—considering itself secure—proceeds with its fishing undisturbed.

The Dipper begins building its first nest in the middle of March, for it breeds twice during the year. This habitation is always placed in a hole or cavity near the water, and generally in a place difficult of access. It makes use of the peculiarities of the situation to the best advantage and in the cleverest manner possible: a conveniently-situated hollow, a hole in the brick-work of a bridge, the floats of a disused or ruined mill-wheel, the stones in a weir, even though it be forced to fly through the water rushing over the same to reach its nest, are all made use of as breeding-places; a rift in the perpendicular rock, with the water flowing at its base, is a locality perfectly sheltered by Nature from all harm, and, except at times of extraordinary floods, sufficiently dry. A flight through the waterfall, a feat so easily performed by the Dipper, is one not likely to be emulated by its enemies; and in such situations the brood is placed quite out of harm's way. Unfortunately this very protection is sometimes a source of mischief, for most early broods are swept away by the angry flood. The structure of the nest varies according to the materials used: it must have a roof, and where the covering of the cavity is not sufficient the bird will build an immense structure to serve the purpose required; the entrance is very small, being just large enough to admit the bird; and the interior of the nest is in the form of a hemisphere. The principal material used is moss, mixed at the most with a little straw, roots of grasses and small twigs; the inside is lined with dry leaves and fine grass haulm. The eggs are from four to six in number, roundish, tender, smooth, and of a uniform white colour. The young, hatched in from fourteen to sixteen days, are the objects of great affection on the part of the parents, who keep them well supplied with food; they remain a long while in the nest. After the nestlings have flown the old birds soon leave them to shift for themselves, and, indeed, drive them from the beat, and thus oblige them to look out for another on their own account. The following year the young birds attain their full plumage, and are ready to breed.

It has been asserted that the Sparrow Hawk is able to catch the full-grown Dipper, and that the young are apt to be snapped up by polecats, weasels, and water-rats; still one thing is certain, that they run far more danger from water than from the above-named animals. They usually manage to keep out of the clutches of man, their great caution rendering it difficult to get within shot of them; and then, as we have before remarked, it is not everyone who can hit them on the wing. They are still more difficult to entrap; their favourite haunts may be beset with lime-twigs or horsehair-nooses, and they are sometimes taken in the drag-net, or caught on the nest, for the female will often sit so hard as to allow herself to be taken with the hand; yet no special means of trapping can, with certainty, be relied on. When caught they always die in the course of a few days, even under the best of care; clear, fresh, running water, is by far too great a necessity for them to do long without it. The rippling of the stream is their lullaby, playing an accompaniment to their song; and when the rushing of the brook is no longer heard they pine away visibly, and soon die.

CHAPTER II.

THE BLACKBIRD
(*Turdus merula*).

"O Blackbird sing me something well:
While all the neighbours shoot thee round,
I keep smooth plats of fruitful ground
Where thou may'st warble, eat and dwell.

Yet tho' I spared thee all the spring,
Thy sole delight is, sitting still,
With that gold dagger of thy bill,
To fret the summer jenneting.

A golden bill! the silver tongue
Cold February loved, is dry:
Plenty corrupts the melody
That made thee famous once, when young."

TENNYSON.

I HAVE often been asked by the uninitiated, if the Blackbird's strain we were listening to in the last rays of the sunset—that song brimming over with woodland life and love, even after night had fallen and chided Nature into silence—were not that of the Nightingale; and when I replied in the negative, my information has been received with an unbelieving shake of the head. Yet the Blackbird will bear comparison with the Nightingale; though unable to grasp the crown, it tries with all its might to vie with the queen of songsters!

The Blackbird, which I have chosen as the representative of the singing Thrushes, is easily described. The plumage of the male is of a plain, soft black; the beak yellow, as also the eyelid. The female and young birds are brownish black, spotted with indistinct spots on the fore part of the neck, and the throat paler. They measure from ten to ten and a half inches in length, and a little over a foot across the wings.

In Europe the Blackbird, or Ouzel as it is sometimes called, is nowhere rare, though it can hardly be said to be very abundant anywhere. Its favourite haunts are woods abounding in thickets and underwood, occasionally intersected by streams and rivulets; in the winter it is found in walks, shrubberies, gardens, and open fences; it keeps in the densest portion of the thicket,—which, indeed, corresponds with its dress,—excepting while singing, and not always then, when it perches on the topmost boughs and branches. Its restlessness soon betrays its whereabouts, for it can scarcely keep silent or motionless for a minute together: the everlasting "tac, tac," or the "zerr," expressive of alarm, are heard without intermission; these notes are given alternately. When flying it calls "kix, kix, kix," and this note is well known to the other denizens of the wood, for, inquisitive and observant as it is, it is generally the first bird to remark anything out of the common, and always estimates true danger aright. Its great caution causes it to be the first to take wing, while at the same time it is careful to give warning, by its cry, to the other inhabitants of the grove; even quadrupeds take the hint, and recognizing the "kix, kix," make a timely retreat. Thus it is detested by the sportsman, on account of the alarm it occasions. He cannot but wonder at the cunning, slyness, care, and calculation, of the creature, though he be not disposed to thank it for so often robbing him of the head of game he looked upon as safely bagged.

In the summer it feeds on all kinds of worms, insects, and mollusks, which it picks up off the ground and from under dead leaves; in autumn and winter it also devours berries of different kinds, though it is rarely so driven by hunger as to attempt to pick them from out of a noose or trap, when hung as bait, or if it does, it manages to eat the bait without being caught. Nevertheless, berries are the best lure, and it is mostly taken by that means.

The Blackbird breeds early in the year. The nest may be found already by the beginning of April in thick trees, stumps, and even on the ground; it is, however, usually met with at a moderate height, and always well hidden. The nest is made of such vegetable substances as the immediate neighbourhood affords, and when not placed in a cavity is always plastered with mud inside, and lined with moss. The eggs are from four to six in number, of a moderate size, and a greenish colour, spotted with brown. The young are hatched out in from fourteen to sixteen days, and are principally fed on insects. The parents abandon them soon after they have left the nest, for in a favourable season the old birds prepare for a second brood; and by the end of May even, they generally have eggs again.

The Blackbird is a favourite in the cage, though its song is too powerful for a room, and on this account it is a welcome addition to the aviary. In captivity it soon becomes accustomed to an artificial diet, composed of curds, wheaten roll and carrots mixed together, and will live for many years in confinement.

I, for my part, do not like it as a cage bird, but prefer it in its freedom in the green wood, which it enlivens with its song. I also admire the bird for its cunning, cheerfulness, vivacity and joyousness, and, above all, for its rich, flute-like song, which rings for such a distance through the wood. On this account I never shoot it,—not even for the table, in spite of its delicate flavour. The Blackbird does us no harm,—on the contrary, a great deal of good: it cheers the human heart with its strains even before the spring is with us; it enlivens and adorns both grove and garden; wherefore then persecute it? It has enemies enough in the shape of vermin!

CHAPTER III.

THE STARLING
(*Sturnus vulgaris*).

> "High on the topmost branches of the elm
> In sable conversation sits the flock
> Of social Starlings, the withdrawing beam
> Enjoying, supperless, of hasty day."—
> HURDIS.

BEFORE the snow has melted from wood and field, before "the Lark at heaven's gate sings," before the Blackbird has begun its rich, full-toned lay, there appears in our northern latitudes a pleasant, cheerful, family friend of ours: returning from his winter journey he perches on the weathercock of the village church, or on the topmost branch of the highest tree in the place, and pours out, clear and joyous, a happy, variable song. It is our friend the Starling, the philosopher of the feathered tribe, the ever-joyous one, always in good humour, always ready for a song, one whom no hardship can cast down, who is always at home under all circumstances, at all times and in all places, and who, even in dull times, ever gives evidence of cheerfulness. I know no other bird like it,—so contented, so happy, and, with it all, so gifted in the way of antics and comicalities. The Starling is a fool, but a very clever fool. When it arrives in the spring the weather is often still very rough, and the snow-flakes whirl around, falling from the leaden clouds above, enshrouding everything in a mantle of gray: there sits our friend in the midst of the driving sleet, in the bitterest wind, quite unconcerned; firm and quiet on his chosen perch he lets us hear him singing away as cheerfully as if the sun were shining! And when the year has passed over and two broods have been reared, and most other birds are silent, a new, bright feeling of spring takes possession of his breast, which he cannot avoid giving vent to in cheerful strains. Whoever has carefully observed this bird cannot help loving it, and willingly erects a box for it to breed in, thus, as it were, inviting the bird's companionship, and by this means attaching to himself a grateful being who can enliven many a dreary hour.

The Starling measures from seven to eight inches in length, by fifteen or sixteen inches across the wings; the tail measures two and a half inches, and the beak somewhat over an inch. Its plumage is black, shot with metallic blue and green, and is often extremely glittering and brilliant; the wings and tail are gray; the feet brownish red; and the beak yellow. In the autumn all the darker feathers are white at the tip, which tint afterwards disappears from friction; at such times the bird has a spotted appearance. The young bird is plain gray, with a lighter throat, and a black beak.

It inhabits the whole of Europe and a large portion of Asia, going in the winter as far as Africa and Northern India. In the South, our species is replaced by a cousin, the Sardinian Starling (*Sturnus unicolor*). In Germany the Common Starling is a well-known, and usually a welcome, summer guest everywhere, and is in many marshy plains very common. This bird usually arrives with us about the middle of February, remaining until late autumn, often till November, when cold and scarcity of food generally drive it further south, though it is much too fond of home to migrate far. Many are found wintering in Southern Germany; the larger portion, however, remaining in Southern Europe. A few stop in Central Germany, if the winter is mild.

The first thing that the Starling sets about after its return home is to hunt up its old quarters, where, perched high on some prominent branch, it bursts forth with a ringing jubilee. The very next morning after its arrival it seems already quite at home, and slips in and out of its box, or nest-hole in some hollow tree, as though it had quitted it but yesterday. One may watch it for hours together with unwearied pleasure, for it always appears trustful, cautious, joyous, active, pleasing, and comical,—one and all at the same time. When on the ground it runs rapidly hither and thither, never remaining still for a moment, and in front of its nest it is incessantly hopping from one branch to another. Its flight is light and quick, and is accomplished without any very rapid motion of the wings. It generally flies, with others of its species, in large bands and for some distance. In the early morning each pair perches in the neighbourhood of the nest, and the male sings his ditty; in the middle of the day they go out to feed, but towards evening they assemble together in flocks of from three to fifty individuals, clustering on high trees, or the vanes and pinnacles of church-towers, and singing in company till the sun is nearly down. While thus performing they inflate their throats, and flutter their wings with a tremulous motion, as though they intended to favour the world at large with something wonderful in the shape of a song; but the whole performance, as we have already remarked, more resembles a cosy sort of chatter, in which snapping of the mandibles and strange notes and sounds, stolen from other birds, seem to form the principal constituents; whilst the remainder only consist of an endless twittering, coupled with a sound resembling a smacking of the lips. After sunset the pairs again separate and make for the woods, where they roost safely amongst the thick branches of the firs.

In March, love-making commences, and the male begins to chatter cheerily to his partner, his song consisting of a thousand different variations. Now, the pair diligently carry materials to the nest, namely, straw, hay and feathers, with which they thoroughly line the natural or artificial abode destined to hold their eggs. By the end of April the nest contains from five to six large, elongated eggs, of a clear, light blue colour, which are hatched out by the female in from thirteen to sixteen days. The male continues to feed and serenade his mate until the young break the shell, returning home along with his fellows regularly every evening. As soon, however, as the young are hatched he no longer has time for more singing, as the little screamers require feeding. He and his mate are now amply employed in collecting all the caterpillars, beetles, butterflies, worms, &c., necessary to fill the capacious throats of their offspring; yet let the parents work as hard as they will, the little wretches are scarcely a moment silent with their clamour. The old birds, however, manage to overcome all difficulties, and succeed in furnishing the young Starlings with their daily food. In from fourteen to sixteen days later the nestlings become big enough to peep inquisitively, one after another, out of the door of their habitation, until they become so pleased with the prospect outside, that from looking they proceed to flying. The parent birds take the greatest of pains with the instruction of their children, and these latter are such apt scholars that their education may be regarded as complete in another fortnight, when the old birds take steps towards rearing a second brood. As soon as the flyers—who pass the first days of their emancipation amongst the thick branches in the neighbourhood of the nest—are considered by their parents as capable of looking after themselves, they congregate together, with other youngsters, in large flocks, and scour the country round all day long until the evening, when they betake themselves to the reed-beds amongst the ponds and swamps, where they roost, chattering and jabbering for hours, however, before their glib tongues find it necessary to take some rest from their labours. In the meantime the parent birds have cleaned out the nest, and lined it afresh with straw. The female now lays the four eggs, of which the second batch is composed, in the freshly-prepared cradle. By the middle, or at the latest the end, of July, the members of the second brood are able with their parents to seek the first family.

Now moulting commences,—a singular period for our Starling, which may almost be called a holiday time. In company with Rooks, Jackdaws, and other birds, old and young wander about the country, hither and thither, in large bands,—here to-day, gone to-morrow. At this season Starlings are as shy as though they had never associated with man. All of a sudden, generally about the beginning of October, they return again in pairs to their old home, and the male commences singing as if it were spring: they do not, however, roost in or near the nest, but return every evening to the reed-beds, where they congregate together in thousands, and keep up such a nocturnal concert as to banish sleep from the eyes of the neighbouring inhabitants.

The Starling is in every respect deserving of our sympathy. It is a useful creature, even though it occasionally nips off our salad-leaves, plucks up a few plants, or finds our cherries and grapes to its taste. Such damage as it does commit is more than compensated for by its diligence in cleaning our gardens and fields from noxious creatures; thus, one is not justified in persecuting it. Fortunately, in Germany, the capture of Starlings in large numbers occurs in but few localities. These comical, jovial birds are much oftener seen in the cage or aviary. If caught young, the Starling becomes very tame indeed, learns to whistle tunes, imitate words or any other striking sounds; it is also very fond of placing itself in all sorts of antic-like postures. Lenz kept a young Starling which accompanied him like a dog, in the house, and about the garden and fields, thus affording him infinite pleasure. Trimolt speaks of another which would mimic the crying of a child in a most extraordinary manner, to the great wrath and distress of the neighbouring nurses; and at last it learnt to imitate the notes of a trumpet to perfection. So much is related of the vocal accomplishments of other Starlings, which have been kept long in confinement, that I can only recommend our merry friend more than ever to the notice of the bird-fancier.

CHAPTER IV.

THE RAVEN

(*Corvus corax*).

> "The stern and gloomy Raven haunted here,
> A hermit of the atmosphere, on land
> Among vociferating crowds a stranger,
> Whose hoarse, low, ominous croak disclaim'd communion
> With those, upon the offal of whose meals
> He gorged alone, or tore their own rank corses."
>
> MONTGOMERY.

THE Corvidæ form a group amongst my feathered *protégés* in no way remarkable for beauty of plumage; on the contrary, the dress is sombre: 'tis a black family, held by man in still blacker estimation, too, than it deserves. Everyone is ready to exclaim at the ugliness, repulsiveness, and roguery, of Crows in general: their extraordinary intelligence, even, is gainsaid; as, for instance, in the fable of the fox and the Raven, where the latter is made to lose his cheese through his want of sense; and we may safely say that their good qualities are never by chance, even, alluded to by anybody. The Raven has no friends, is loved by none, tolerated by no one; on the contrary, young and old are banded together for its destruction. The different members of this family are ruthlessly murdered, their eggs and brood taken, and their nests destroyed. I will not attempt to clear the members of this group from *all* the accusations brought against them, though at the same time I am ready to enter the lists in their favour. Seven members of this genus inhabit Germany: five true Crows, namely, the Raven, Carrion Crow, Hooded Crow, Rook, and Jackdaw; and two species of alpine Crows or Choughs; in this way we have the mystic number in its integrity.

Thus Raven, Crow, and Daw, are the principal names by which the commoner species are known. What names! Not one of them but has a sombre ring about it. The appearance of a Raven on the scene at an inopportune moment would render the sacrifice of none avail in the eyes of the Roman augur. The Bible speaks of the Raven as the emblem of vengeance:*—"The eye that mocketh at his father, and despiseth to obey his mother, the Ravens of the valley shall pick it out, and the young Eagles shall eat it." And in our time the Raven is not regarded with more favour than it was then. The gibbet and the wheel are rarely depicted minus the Raven. Sayings and proverbs alike perpetuate ill-will towards the whole brotherhood. "He steals like a Raven," or "chatters like a Magpie," may be given as examples.

I have already spoken of this family as being cosmopolitan, and in many of their actions and ways, members of the same show a great sense of freedom: they know no master, and follow no peculiar or distinctive calling; they seek their food openly and in a straightforward manner, or the reverse, just as best suits the occasion. Unfortunately it must be confessed that they are guilty, at times, of acts which, in a certain sense, may be regarded as *thefts*. Like man they are omnivorous;

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* The author seems to have forgotten that Elijah was *fed* by Ravens.—*W. J.*

nothing eatable comes amiss, though their ideas of what may be considered as palatable differ somewhat from our own on the subject, and embrace a larger *menu*. They feed on carcasses, whether of their own killing or found dead, worms, mollusks, insects, and larvæ; they are fond of fruits, seeds, berries, grain, nor do they despise offal and the refuse from the kitchen. The district over which they seek their food is as extended as the latter is various. They kill young birds, plunder nests, destroy small animals, and beg and steal alike in woods, fields, town or country, on land, and in or on the water. Inasmuch as they are not dainty, are blest with strong appetites, and that their modes of living are so varied, it is evident they can be at the same time very useful and very injurious to man; this is indeed the case, but the services rendered by the family collectively by far outweigh the damage caused by solitary members of the same.

Those species which may fairly be looked upon as injurious, are the Raven (*Corvus corax*) and the Carrion and Hooded Crows (*Corvus corone* and *Corvus cornix*). The first of these, with which we have at present to do, is undoubtedly a thorough scoundrel, a sneaking thief, an out-and-out rogue, and a bold robber! It kills every living creature over which it can get the mastery: hares, Pheasants, Partridges, and other game that may be wounded, starving or perishing of cold,—all fall victims to it; it seizes them, like a bird of prey, with its talons. It has a great partiality for young, unprotected lambs, Geese, Ducks, and chickens. It sucks eggs with the greatest gusto, and is constantly persecuting and harassing fisheries; thus committing, as it does, all these crimes, it is not astonishing that its arch enemy is—man.

The Carrion and Hooded Crows imitate the Raven to the best of their ability; *i.e.* they rob and plunder in proportion to their strength. In addition to the aforesaid misdeeds, it may be added that the entire family of Crows shows a great and particular predilection for the glittering mammon of this world,—gold rings, silver spoons, and other bright objects, are most eagerly seized; I may indeed say that they have a veritable passion for such booty, which propensity has at divers times caused knights, bishops, serf-owners, and other cruelly-disposed individuals, to indulge freely in the vices of jealousy, mistrust, false condemnation, vengeance, and murder, and lastly led to the bitterest remorse and perdition: so saith legend and story. This, however, closes the long list of depredations committed by the black brotherhood; for the circumstances which led to their feasting on human corpses left exposed on the gibbet or the wheel, are out of their control, so that in this case no sin can be laid to *their* charge, though the fact speaks in condemnation of the hideous barbarity of an age which denied the corpse of a criminal, condemned by the laws of the land, a christian burial. When *man* can regard the human body in the light of carrion, one cannot really expect the *Raven* to think and act in a more civilized manner!

We will now, however, turn our attention to the virtues of the Crow family, as a set-off against the long row of misdeeds we have so faithfully chronicled. All members of the black tribe are, without exception, excessively useful to the farmer. The Rook, Chough, and the Jackdaw, may be said to cause us no mischief whatsoever,—on the contrary, they do nothing but good on the land; so that if we look upon the misdeeds of the Carrion and Hooded Crows as counterbalanced by their utility, there only remains our sinner in chief, the Raven, on the one hand, while the other six members of the family are our benefactors.

All the Corvidæ destroy myriads of noxious animals, which, if left to themselves, would cause endless damage to our farms and forests: mice of all sorts, as well as hamsters, are the favourite prey of the stronger species, and insects that of the weaker. Besides these they destroy slugs, snails, and lizards; all the larger species catch and devour the venomous adder. The Rook is the only creature capable of preventing or arresting the ravages of the cockchafer and other beetles. What would be impossible for man to carry out, is accomplished by the valuable assistance of this bird, with the utmost patience and address. Rooks set about the destruction of grubs, and the beetles which they turn into, in the most systematic and intelligent manner possible. They, as also the Carrion and Hooded Crows, confidently follow the ploughman at his work, taking care not to leave a grub or a mouse behind, which the plough turns up: the one is either picked up or dug out of the ground with the beak, while the other is despatched with a few blows, and then devoured. This occupation is continued as long as ploughing-time lasts. There is other work, however, to be done as well, for as long as grass and weeds are in the fields and meadows, all members of the Crow family find ample employment in destroying snails, slugs, grasshoppers, caterpillars, &c. They work hardest in the month of May. The numerous progeny are now full grown, and still demand four times the nourishment required by the parent birds, so that the latter now prosecute their search for food with enhanced activity, the booty consisting principally of cockchafers. These sociable, sharp-sighted birds soon spy out a tree laden with these obnoxious insects, and, as if by agreement, divide themselves into two bands, one of which alights on the tree, and the other beneath it: those above shake down myriads of cockchafers, which are picked up by the party below. Each Rook collects from ten to fifteen of these insects at a time in its elastic throat and crop: with this load the bird returns to its nest, feeds its young, and in less than ten minutes the arduous collector is again at its post, recommencing its useful labours as before. The result of such industry must be self-evident to anyone who can calculate, and who is an observer. Rooks always nest in colonies, numbering from twenty to three or four hundred pairs. Supposing a colony of these birds to consist of eight pairs, each producing only four young ones, we have a total of close upon five hundred Rooks, each of which destroys daily at least forty cockchafers; so that, independently of the slugs, caterpillars, larvæ, mice, and other vermin that they capture, they annihilate twenty thousand of these insatiable insects per diem! One may easily become convinced of the services rendered by these birds, if a few dead Rooks be hung about a field, for the survivors are so effectually scared by the corpses of their dead companions that they will cease to trouble a field so protected,—or, shall we rather say, abandoned. This done, the crop is left to the tender mercies of every description of vermin, so that the farmer will soon have ample opportunity of appreciating the services rendered by the sooty band.

One thing is certain, no matter what authors of fables may write, and that is, that sportsmen are well aware of the caution and acuteness of the Raven. The senses of these birds, and their organs, are alike exquisitely fine and delicate in their construction: their sight, hearing and smell are excellent, sharp and unerring; the senses of touch and taste are no less so, though their appreciation of "high-game flavour" is probably far greater than ours. The impressions formed under the influence of the senses are backed most strongly by the greatest intelligence. The Raven is never deceived through any carelessness or want of caution on its part: it investigates, proves and draws comparisons from previous experience, before it shows confidence. Its extraordinary memory, enables it to retain the impression of its observations, and careful reflection on the same is condensed, if we may so term it, into experience and warning: it calculates and measures, reflects before it acts; its knowledge increases with years, developing itself in fresh stratagems and artifices. All its feelings, with the exception of those connected with its mate and progeny, are regulated by its reflection and intelligence. From its earliest existence it is impressed with the necessity of looking out for "number one," and is on this account selfish, and ever ready to take every advantage, even to the disadvantage of others, so long as its own safety is secured, and it is the gainer, though at the same time it occasionally gives evidence of good nature. When in search of food it employs every artifice and means to obtain its end. Cunning as the fox, it inveigles every quadruped that allows itself to be bamboozled; sparing no trouble, it grubs and pecks about with its beak in every likely spot. Calculating and intelligent it becomes possessed of the goods of others, and makes use of and feeds on animals, which from their construction and habits would appear to be safe from its attack. Ravens will force birds of prey, and even their own species, to abandon their quarry. The Raven will seize on shell-fish and tortoises, and, bearing them aloft, drop them on the rocks so as to break their shells, and thus is enabled to enjoy the contents, without which expedient it would be minus its dinner. The pursuit of the Raven is one of the most difficult and tantalizing that we have: it laughs at human intelligence; it meets the artifice of man with greater artifice; his cunning with superior cunning. It is well acquainted with the aspect of the harmless ploughman, and equally so with the sportsman, let him appear ever so innocent; and on this account it approaches the former fearlessly, while it never fails to discover the latter in any disguise that he may choose to adopt.

The every-day life and domestic economy of the Corvidæ is very interesting to the impartial observer, who knows how to estimate it at its true value. They belong to those birds whose notes are the first one hears in the early morning. By sunrise they are in full activity, and remain so till mid-day, when they retire to drink, while at the same time any small fish or aquatic animal, which they may happen to find in shoal-water, is not overlooked, nor is it despised, for they will continue to feed as long as there is anything to eat. In the height of summer they take their siesta during the hottest hours of the day; and in the winter they assemble on the tops of trees and hold a palaver, while the process of digestion is going on. In the afternoon they return to their labours; towards sun-down they take their evening drink, and then retire to roost.

The Raven is at the same time the type and head of the family,—the representative of the Corvidæ; not that it is not known by any other name, for in Germany its names are legion, a richness in nomenclature, descriptive of its universal activity, cosmopolitan and other well-known characteristics. Hundreds of our other native birds are far greater scamps than the Raven; yet no one is aware of their existence, or mentions them: *its* name, however, is in every mouth; he is considered ignoramus indeed who is ignorant of the Raven's existence!

In Central Germany, however, this is not so much to be wondered at, as the Raven does not care to live on intimate terms with man, and always avoids his approach. Thus, with us it is found in sparsely-inhabited districts, amongst mountains, in over-hanging woods, on rocky iron-bound coasts, and in other localities, where it can live undisturbed. Towards the limits of our continent, namely, in the north, south and east of Europe, it lives on better terms with the "lord of the creation," possibly because man in these regions does not so readily judge or criticise its *innocent* pleasures and actions! In Spain, Greece, Sweden, and Russia, it may be looked upon as a common bird. Besides this, it extends its range far beyond the limits of Europe: the inhabitants of Kamtschatka can tell of it, as well as the Greenlander; the Arab, as the Lapp; the Finlander and native of Siberia have the honour of its acquaintance; and it is to be met with in the Himalayas.

The localities selected by the Raven are well chosen. It inhabits extensive districts, taking especial care that the resources are varied. Places where woodland, fields and water, are alternately to be met with, are its favourite haunts, because food is abundant in such localities. The sea-coast or southern mountains possess these advantages, more than do the flat plains: in such places Ravens are sometimes to be met with in bands, and I remember once to have seen such a one in the Sierra

Nevada of Spain, numbering as many as fifty individuals. In such localities the Raven soon forms a prominent figure in the landscape. This large, striking bird is remarkable from afar; and its loud note, "craak, craak," less often "crouk," changing to a full-toned, "cloog, cloog," when the bird is unusually merry, may be heard a long way off. The expert easily recognizes the Raven by its beautiful, graceful, and active flight; its long, pointed wings, wedge-shaped tail, and superior size,—one-third more than that of other crows,—as also by its proud bearing.

In the gray of the morning the Raven ranges alone over his beat, excepting in the breeding season, when he is accompanied by his mate and progeny, as long as the latter are young and inexperienced, and therefore not self-dependent. He quits his roosting-place with caution, and rising to a safe altitude majestically takes his departure, gliding, when bound on business, for long distances on immovable pinions, now and again rising and falling in a beautiful screw-like line, hastening his flight with a more rapid motion of the wings. When taking a "constitutional" he performs various antics in the air, darting suddenly down a distance of several feet; at other times, however, he never seems to forget his own importance. On the mountains he flies near the ground, while he always crosses a valley at the height of the surrounding hills. In these flights nothing escapes his vigilant eye,—no incautious leveret, no mouse, no clumsy bird that moves, let alone any carrion there may be about; the latter is always approached with the greatest caution: circling over-head he descends gradually, ere he determines on alighting; when on the ground he steps forward with almost royal dignity and upright carriage, holding his head on one side with a reflective air. Arrived at the carcase, he halts, makes a mental estimate of it, and, looking cautiously about him, takes a bite, but immediately looks up again, listening on all sides; he acts in this manner continually during the whole meal. After his appetite is satiated, he takes a comfortable, though cautious, rest; he then cleans his beak, preens his feathers, and struts up and down; at the slightest alarm he immediately takes wing.

When engaged in hunting, his movements are quicker. Like a bird of prey, he dashes suddenly down upon small mammals, or indeed those of middling size, if sick or helpless, and belabours them with his sharp beak, making the fur fly in all directions. If the prey he pursues takes to flight, he arrests its progress by attacking the head, thus obliging it to turn about. In this manner he will, by degrees, worry to death quadrupeds of comparatively large size. He will cut fish out of the ice, or capture them alive when in shallow water; he runs after lizards, and kills them by striking them on the head with his beak, while he smashes shell-fish on the rocks, as we have before described.

During the breeding season, whilst the young are small, and even when they are already half grown, they require a large amount of food, a demand which calls for great exertion on the part of the old birds. The Raven is, next to the Crossbill, the earliest breeder that we have. The pair commence toying, as before mentioned, already in the month of February, the male ogling his partner, and courting her with a low "klak, lak, lak, leck," or "kluk, kluk," and "kourr," or carries on a really continuous and varied coaxing conversation, to which declaration of ardent affection she replies to the best of her power, in a similar manner. Courtship finished, both birds usually begin to carry out the repairs necessary to the nest, the male carrying, and his mate laying, arranging, and smoothing the materials. The nest itself is from two to three feet across, and a foot in thickness; the semi-spherical hollow is from four to five inches in diameter. The foundation is composed first of dry sticks, of about the thickness of the thumb, intermingled with mud and clay; the next layer is formed of thinner sticks, roots, and pieces of ling, upon which is placed the real nest, composed of strips of bark, moss, grass, small twigs, and lined with pigs' bristles, and wool. The whole structure is thoroughly shot-proof, the locality selected being none the less calculated to render it so, for when the nest is placed in a tree, the tallest, thickest, and most inaccessible one is sure to be chosen. Thus, for example, our acute friend prefers the Scotch fir to the larch, on account of its very slippery bark; the nest is often placed on a dead branch, rendering the task of reaching it one of danger to life and limb, and the place selected is always either almost or quite inaccessible.

In the beginning of March the female lays four or five eggs: these are rough, pear-shaped, and of a grayish green colour, spotted and blotched with darker shades. The duty of incubation is performed by the female, without the assistance of the male; the latter, however, keeps his mate well supplied with food, and entertains her to the best of his ability during her tedious occupation. Soon after they are hatched the insatiable youngsters cry out lustily, with their open mouths towards heaven. As soon as they can stand they tread the nest flat, and take great care to keep it clean; and even when kept in confinement they make a backward movement when voiding their excreta.

Both parents are much attached to their offspring, never, however, losing sight of necessary caution. Even while carrying the materials to the nest they thoroughly examine the neighbourhood before alighting, and they are still more mistrustful when they have eggs or young ones. If the nest is disturbed previous to the eggs being laid, the Raven never builds a second one that year, neither does it attempt to raise a second brood if the first one comes to grief. If, however, the eggs are laid and hatched out without any misfortune happening to them, the Raven redoubles its caution and care for their safety, as well as its own. If a human being approaches the nest the Raven slips silently away as soon as the enemy is within a hundred yards: it soon returns, however, circling round the nest at a safe height, watching what may be going on. Its distrust is boundless, if the individual remains any length of time under the tree in which the nest is placed. The slightest alteration in the neighbourhood of the nest perplexes it immensely: a newly-erected hut or screen is in no wise calculated to mislead it, or to pass unobserved; it manages to keep clear of every danger that threatens. Under such circumstances it will let the brood clamour for food for hours together, though while circling over-head it evinces its pity for them, and seeks to allay their trouble by a call of compassion, and in extreme cases it will drop food into the nest from a height. As soon as the patience of the enemy is exhausted it returns to the nest, and tries to make up for lost time. If the nest is really being harried the parent birds perch on the nearest tree out of shot, and set up cries of distress; they are clever enough though to keep out of reach of their terrible enemy, as if they knew that any exertion on their part would be of no avail. For all this, the Raven fulfils its parental duties most conscientiously, even when wounded.

The young, long after they are able to fly, are fed and looked after by the old birds. The first care of the latter is to conduct their offspring to some place where their education may be matured,—that is to say, to some locality where they can take short flights in safety, especially preferring precipitous rocks furnished with projecting ledges: here, after a few days, one may find the remains of their food lying about in heaps. When in Norway I once ascended a rock of this description, and found on one ledge the shells of nearly sixty eggs of the Eider Duck, different Gulls and Curlews, besides the legs of Fowls, Ducks'-wings, Lemmings'-skins, the remains of young Gulls, Sandpipers, Plovers, &c. In spite of this ample supply, the youngsters kept up an everlasting clamour, and the old birds continued to bring fresh prey to the shambles. No wonder, then, that all the Gulls in the neighbourhood became furious as soon as the Ravens showed themselves, and mobbed them to the best of their ability, and that the tenants of the neighbouring farms cursed these destructive birds from the bottom of their hearts. The whole family keeps together until late in the autumn, when the old birds, who begin to think of breeding again, drive their children away.

Ravens taken from the nest are easily reared, becoming very tame, and feeding on anything that is eatable: they will live in confinement for many years. The Raven soon learns to know its master, and to distinguish him alike by his voice and by his gait; will answer when called by name; and may be easily taught to speak *without having* *its tongue cut.* My father had one called "Jacob:" he was allowed the run of the yard and house, and soon after his capture commenced his studies in the talking line. He learnt all his words from my father's voice, and imitated it so exactly that on several occasions people came "to see the Herr Pastor, who they had just heard speaking." The bird first learnt to say his own name, "Jacob," to which after a while he added such words as were usually appended to the same when he was called, such as, "Jacob, come here; there, come along Jacob." He next picked up "Rudolph," calling that individual by name whenever he saw him. His first keeper was called "Wilhelmina," and used to welcome him with the phrase, "Good morning, Jacob," when she brought him his food: these words, as well as others, he soon learnt, not only by heart, but turned and twisted them about after his own fashion; thus, he would stand under Wilhelmina's window in the early morning and call out, "'mina, get up!" until she really did get up. Another of the maids was called "Christel:" this difficult name caused him much trouble to learn, but he did not rest until he could say it, and wake her also. No one took any pains to teach him; he learnt all of his own accord, and was indefatigable in his labours, till he had succeeded in saying what he wanted. He imitated the barking and growling of the dog,—which he used to tease, by the way, pretty often,—the cooing of the Pigeons, clacking of the Fowls, and the laughter of the children. He was the tyrant of the courtyard: the Fowls and Geese were bullied right and left; next the dog, who loudly expressed his indignation at the insolence of the bird, until, finding himself coming off second best, he retired on his dignity from the conflict. In short, "Jacob" amused himself by worrying every living thing in the place; played with any little article he could find, often burying it, as indeed he would any portion of his food which remained over. His duels with the Cock were magnificent; he chased the Hens from their food, and the Ducks and Geese, even, were obliged to capitulate. Another Raven, which my father had, used to kill the chickens, and attack small children, which misdeeds finally led to his execution.

Hall, an Englishman, speaks of a Raven, kept at a public-house, which was trained to call and drive the Fowls to feed: one day this bird stole all the silver spoons from the parlour for the benefit of his guests, and laid them out before them on a heap of rubbish, a cover for each Hen, and then played the part of host.

Naumann speaks of the Raven in the capacity of foster-father:—"A boy had taken a young Raven from the nest and reared it. Some ten days after, as soon as the bird could feed itself, the boy procured two young Rooks, which, along with the Raven, he fed on Rooks' flesh. The Rooks took their food as usual, amid much noise, from the hand of their keeper: this seemed to touch the heart of the Raven, and he forthwith undertook the task of feeding them himself, and whenever the Rooks called for food he fed them. The boy had now only to cater for the kitchen, the office of nurse being fulfilled by the young Raven, a task of which he was never tired,—feeding, not only the first two, but several other young Rooks that were handed over to his care!"

Old Ravens often show the same desire to act as foster-parents, though their *protégés* are often, despite friendly intentions, much troubled by their guardians. The naturalist, Pietruvsky, possessed a Raven who elected to choose his own companions, after having once had a Magpie placed in his cage, which had been caught one day by chance. The companionship of this bird seemed to please the Raven, for when winter came round, and other Magpies appeared in the neighbourhood of his habitation, Mr. Raven would, as soon as he was let out of his cage, give chase, and, whenever he felt bored, capture one of these birds, holding it in his claws, and calling out until his keeper released the bird from his grasp. The former would not, however, let the Magpie go, but would place it in the cage, for if this were not done the Raven would continue catching Magpies until his wish was gratified, when he would return to his cage, and over-burden his new companion with attentions and caresses.

CHAPTER V.

THE BEARDED TITMOUSE

(*Parus biarmicus*).

> "Freund Bartmännchen hält sich stattlich und stark, ja es hat gravitätische Haltung;
> Sein Schnabel ist rings mit Borsten besetzt, und sein Bart ist von eigner Gestaltung:
> Er läuft von der Schnabelwurzel gekrümmt, wie ein Knebelbart über den Wangen,
> Der Rücken ist röthlich, der After is schwarz, und der Schwanz gehört zu den langen.
> Dem Weibchen mangelt der Knebelbart,—wär' auch just keine zier für ein Weibchen;—
> Sein Scheitel ist rostroth und schwarz gefleckt; es zeigt ein zierliches Leibchen.
> Die Schönheit der Farben, die edle Gestalt und die Munterkeit, welche sie zeigen
> Empfiehlt diese Vögel ganz ungemein, auch Gesangstalent ist ihnen eigen."
>
> Bechstein.

Amongst the cheeriest, liveliest, and most useful birds which we have, are those which belong to the Titmouse family: they are always in motion, tumbling, like acrobats, from tree to tree and from branch to branch,—quarrelsome and noisy as is their wont. In Germany we have nine or ten resident species. I have chosen for description one which is not very common with us, and which belongs more strictly to the East and South-east: it is undoubtedly, however, by far the most beautiful representative of this handsome family; and as the description of one member will serve for almost the whole family, my selection will be sufficient.*

Titmice are active, joyous, impudent, courageous, and exceptionally restless birds. They are all exceedingly intelligent, but their curiosity and violent disposition often leads to their capture, and proves dangerous to their welfare. Their good and bad qualities are equal; for, in spite of their sociability, they are quarrelsome, impetuous, and thievish. This, however, must not trouble us; man must take these birds as he finds them, and recognize their immeasurable utility before he can appreciate them at their true value, when he will learn to like them despite their tricks, if he examines their habits with the care and liberality of feeling befitting a true observer of Nature. Titmice are, to my mind, most charming little creatures, who understand how to enliven the weary-hearted spectator in a thousand different ways. Their life is a merry one, and no mistake: a troop of Tits traverses its beat,—climbing, hopping, flying and springing, scolding and quarrelling, singing, and playing every conceivable antic; always doing something, and often engaged in some utterly useless employment.

All Tits are, at the same time, artists, yet bunglers. They are no songsters, and yet they sing the livelong day,—summer, winter, spring, and autumn; they are not climbing birds, still they might challenge a parrot for a wager at that occupation; they are not furnished with carpenter's tools, like the Woodpeckers, and yet they are ever hammering and chiselling at some piece of bark or rotten branch; they are no birds of prey, but, for all that, thieve and plunder in proportion to their size, their whole life long; they cannot be called fighting birds, and yet they are always quarrelling with other animals, both greater and less than themselves. They almost always live in bands, and still they are ever at loggerheads with one another; more so, perhaps, than any other class of birds. In Spain, they call our Great Tit by the *soubriquet* of "Guerrero," that is to say, warrior, or, better, brawler; a more fitting nickname could not perhaps be found for him. Inquisitive by nature, they discover and see everything,—every cat, bird of prey or any other enemy, every morsel of food, every insect, let it be ever so cunningly hidden in a crevice of the bank. Bold and courageous, they hold their own against adversaries stronger even than themselves, and they will almost always drive any common, rapacious animal from the object of its chase, if they only see it in time, by their mocking abuse and scolding. They are very intelligent, and soon find out if they are allowed to remain unmolested, becoming extraordinarily tame and trustful towards man, taking up their abode near him as willingly as in the most secluded wood: for all this, however, they always show great independence of character. They make themselves as comfortable as circumstances will allow in every locality. If you bring a freshly-caught Titmouse into a room it will not conduct itself in the impetuous, silly manner adopted by most other birds: after a few minutes it behaves as though it had lived in the room for years, commencing to lord it over every living creature in it, squabbling with all alike, and going so far as to kill such fellow-captives as it can manage to overpower! It watches its enemy, the cat, unremittingly, with the greatest distrust, as soon as it appears on the scene; its conduct towards the dog is bold and impudent; and after a few days it is on the best of terms with its master, though it will not let slip any opportunity of escape that may chance to present itself, and if successful acts immediately as if it had never been caught.

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* But few ornithologists of the present day, we believe, look on this species as being a true Titmouse, and Koch's view of the matter—in separating it generically from the *Paridæ*, and placing it in a genus by itself, under the title of *Panurus*—has been very generally accepted. We cannot do better than to refer our readers to the interesting chapter on this bird in Prof. Newton's edition of Yarrell's 'British Birds.' The observations contained in the six paragraphs which follow relate to the Paridæ in general, exclusive of Panurus biarmicus, but are in no way applicable to that species.—*W. J.*

All Titmice have a hopping gait, and that is sideways or crab-like, one foot in advance of the other. They never walk, excepting when forced to alight on the ground; otherwise they are continually climbing up and down the branches and twigs of trees. They cling adroitly to the thinnest sprig, and it is all the same to them whether they hang head downwards or not, whether they climb up or down, perpendicularly, forwards, or backwards. Their strong feet and sharp claws allow of their climbing in any position, whether that of Parrot, Crossbill, Woodpecker, Nuthatch, or indeed any other scansorial bird. Their flight is not so perfect, though it is light and active enough. The notes of the different species bear great resemblance to one another, principally chirruping and whistling like mice; the song is nothing very grand, though pleasant.

In their search for food they render us endless service. They eat a great deal, feeding chiefly on the eggs and larvæ of the most destructive of all creatures,—insects; seeds of weeds are less frequently eaten. No other class of birds are so admirably adapted by their habits to creep into and about all kinds of rifts, crevices, thickets, holes, &c., in search of these pests, which they find adhering thereto. No other birds, hardly, destroy so many insects as these ever-hungry and active creatures. They are fully capable of clearing gardens and woods from noxious insects, and would do so more efficiently than they do, did not man add his name to the list of their numerous enemies, and capture them by hundreds: this is effected by the Titmouse-hut or trap, previously described, and which I look upon as a monument of the most cowardly stupidity. A "forester" actually once said to me: "Tomtits are very useful, *but they are rare good eating;*" thus trying to excuse the great damage he brought about with these very traps. We acknowledge the utility of these birds, the inestimable good they do us, and yet persist in destroying them, because they produce a dish which pleases the fanciful taste of the *gourmand!*

Titmice are birds of passage, as well as resident. They travel in bands, different species mixing together; they also associate with birds belonging to other families, such as Woodpeckers and Treecreepers: their journeys are, however, limited in extent, and they soon return home again.

The Bearded Tit is about seven inches long, and eight inches across the wings. Its plumage is soft as silk, the colouring delicate and pleasing to the eye. The head of the male is pale, ash-gray blue; the back and upper part of the tail cinnamon-brown; the under parts are of a pale rosy red; a black moustache runs downwards, from the base of the beak and the eye; across the wings there is a white band, black on the lower edge; the lower tail-coverts are of a deep black. The female is less in size than the male; pale ash-gray on the head; the neck, back and shoulders are of a grayish red-yellow, streaked with a darker shade; the wings show but a slight indication of the bands seen in the male; and the lower tail-coverts are grayish; the feet and beak are of the same colour as those of the male, namely, the first black, and the last yellow. Young birds are to be distinguished from adults by having darker backs.

The Bearded Tit is a native of Russia, Galicia, Hungary, England, France, Italy, Spain, and Holland; it is rare in Germany and Switzerland. It is a true reed-bird, and only frequents the neighbourhood of water and reeds, mostly where the latter grow in large beds and of great height, thus forming covert rarely visited by man, and therefore generally undisturbed. In these localities it lives so hidden from sight as only to be noticed by those who go out for the express purpose of seeking it. This bird is never seen on trees. It is a very lively, restless, bold, and powerful bird; hence a true Titmouse in character. It climbs up and down the reeds with great dexterity, swinging in air on the waving tops of the same, and practising all the inborn antics common to the family, with activity and patience. The note of the Bearded Tit is a short, clear "zip, zip;" the call is a peculiar chirping sound, and the song very simple, being really only a low twittering, interspersed with a few purring, disjointed notes. For all this, it is a favourite cage-bird on account of its lovely soft plumage and pretty moustache; its cheerful habits, and tameness, win for it the good-will and friendship of man.

Its bag-shaped nest, if not so skilfully constructed as that of the Penduline Titmouse, is nevertheless one of the most artistic amongst birds' nests: it is suspended from a few reeds crossing one another; the entrance hole is at the top; sometimes there are two. The materials of which the nest is composed are strips of bast, fine reed-tops, and cotton, gathered from different plants; it is thickly lined inside with the latter. Our little friend breeds late in the year, because the nest is never suspended from other than old reeds; the former is very difficult to find, and for this reason little is as yet known of the bird's habits while breeding. The female lays four or five eggs, of a pale red, speckled with brown, and sits in turn with the male.

The Bearded Tit, like others of the family, is easily shot if seen, and may be without difficulty taken in almost any trap. It becomes very tame; and, when fed on Nightingale's food and seeds, may be kept for several years in captivity. When confined in a large wire-cage, and allowed to fly about the room, it is a real pleasure to see the little creature. Male and female, which must always be kept together, appear to be inseparable, calling continually to one another, if parted though only for a moment. When they meet again they purr to one another, with half-closed eyes, in the most curious manner possible, holding the head lowered and spreading out the tail-feathers, as though "drumming," like a Pheasant; in fact, they coax and cosset one another in every describable manner by which one bird can evince its affection for another. Thus they may be highly recommended as companionable pets for the aviary.

CHAPTER VI.

THE WOOD PIGEON
(*Columba palumbus*).

> ". . . . In answer cooed the cushat dove
> Her notes of peace, and rest, and love."
>
> SCOTT.

THE Wood Pigeon is the largest of our indigenous Pigeons. It is scarcely smaller than a Pullet, being from seventeen to eighteen inches long, by from thirty to thirty-two inches across the wings, besides which, it is a beautiful and stately creature. The white bars on the wings, and white crescent round the neck, distinguish it from all our other native Pigeons; a knowledge of its habits does not allow of its being confounded with any other. It inhabits Northern Europe and Asia, as far as the arctic circle; mountain and plain, pine forest and greenwood, are alike frequented, though it seems perhaps to prefer the latter. It is not unfrequently found in copses, large gardens, shrubberies, and, as we have before stated, it even enters our very towns. With us it is a true migrant, whereas in the south of Europe it is only partially so. Unperceived, it reaches us in March, remaining in our woods until August, or even September; after which it roams about in small flocks, gathers together in larger bands, and then goes southwards, where it passes the winter in immense flocks. In the neighbourhood of Madrid I have seen bands of these birds, which may have numbered from five to eight hundred individuals; they were not less common in the Sierra Nevada. They are also often met with in Northern Africa, especially in Algiers, but do not appear to go further southward.

The Wood Pigeon is a very quick, timorous, and shy bird. Its gait is good, though not very rapid, and when walking it carries its body almost horizontally, nodding its head at every step. Its flight is magnificent, being fast and active: when rising it clacks its wings, and proceeds with a rushing noise through the air; the loudness of these two sounds render our bird recognizable from all other species.

Excepting in the autumn, when it is met with in flocks, the Wood Pigeon is found in couples, or small bands. The male and female pair off soon after they reach us, and from that time always remain in company. They next take up their abode in a certain portion of some wood, and seek a suitable place where to build their nest, the construction of which is soon commenced. In the early morning both birds fly, often to some distance, and perch on certain favourite trees; from the top of one of these the male proclaims his love to his mate, and the world at large: this is demonstrated by vigorous cooing, accompanied by a variety of movements. The love-ditty of all Pigeons is difficult to describe; it resembles that of the domestic species. The cooing of the wild bird is deeper and more powerful than that of the tame one, and sounds somewhat like the syllables, "āoo, coo, cooāh," &c. The female answers but rarely, and then with a softer, "hoo, hoo." During the pairing season the Wood Pigeon seems to lead quite a different life to what it does at other times:

its mode of living is most regular, almost every hour being allotted to some special duty. At dawn the male flies to his favourite tree to coo; at seven or eight in the morning he is silent, and goes to feed with his mate, that is, if she have no eggs or nestlings, and also to the salt-lick; at ten he coos again, but in a lower tone and not so continuously; at eleven both male and female go to drink; during the mid-day hours they take their siesta, hidden away in the top of some thickly-leaved tree; at two or three they again fly out to feed; at five or six the male coos his even-song, slakes his thirst again, and finally betakes himself to roost along with his partner. When cooing, the male is very restless: with the exception of taking due precautions for his own safety, his attention is wholly absorbed by his spouse; he has no thought but for her; to please her he joyously gives out his curious note, flies suddenly into the air clapping his wings, and swooping down again into the tree. The female rarely follows him, generally awaiting his return at one spot: she never gives him the slightest cause for jealousy, and at the same time manages to monopolise his attentions during pairing time; at all events, he vehemently pursues every rival, even though it does not lead to a regular pitched battle; but, no matter what the heat of his passion may be, he is ever on the alert against danger. Already, before actually pairing, both birds commence collecting materials for their nest, which latter is placed at various heights from the ground on a bough of a large tree, generally low down. The nest is composed of fir, larch, beech and birch twigs, and is more slovenly and badly built than perhaps that of any other bird. Very often the eggs may be seen from below, and sometimes even fall through the structure, and are broken.

Occasionally the Wood Pigeon builds no nest of its own, but lays its eggs in an abandoned squirrel's dray, or Magpie's nest, which needs but little labour to render it fit for use. The eggs are laid by the end of April: they are white, and somewhat small in proportion to the size of the bird. Both birds assist in the business of incubation, taking turn and turn about, for from seventeen to eighteen days; the female sitting from three in the afternoon till nine in the morning, the male being on duty for the rest of the day. It is in the rearing of her young that the character of the Pigeon is seen to the greatest disadvantage: she is, together with other allied species, perhaps, without exception, the worst and most heartless of mothers, one indeed that will forsake her callow brood if she is in the slightest degree disturbed. This unnatural parent will even abandon a newly-hatched nestling, and leave it to starve, if its companion is taken out of the nest. If undisturbed, the parent birds rear their offspring without trouble or self-sacrifice: they feed them at first with the cheese-like secretion from the crop, to which we have before alluded, and later on with half-digested seeds. They only feed their young twice in the day, giving them, however, a large quantity on each occasion. The nestlings are fed by the old birds for some little time subsequently to their leaving the nest, after which they must learn to cater for themselves, as the parents soon set about rearing their second brood.

The Wood Pigeon may be looked upon as quite harmless, for the small amount of grain which it consumes from off fresh-sown fields is scarcely worth speaking of. Its favourite food is the seed of different species of pine; this is chiefly gathered from off the ground, or those cones which have burst open. Besides the aforesaid, it eats the seeds of different grasses, and, like the Common Pigeon, destroys those of the various kinds of wild vetch, which are so injurious to the agriculturist. Thus the Wood Pigeon is decidedly a useful bird. In the autumn they feed on bilberries;* in the spring, on the buds of trees and male catkins; and abroad, the produce of the ever-green oak.

If the sportsman wishes to stalk this bird with success, he must approach it when in the act of cooing. Though difficult to catch, it is, however, easily reared by hand when taken from the nest, or if placed under the care of tame Pigeons. Pietruvsky was the first person who succeeded in inducing Wood Pigeons, so reared, to breed in confinement. Since then, individuals that have been caught have been known to breed in several zoological gardens.

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* The Wood Pigeon also feeds largely on acorns.—*W. J.*

CHAPTER VII.

THE SAND GROUSE
(*Pterocles arenarius*).

> “But forget not, when praising the tribes of the air,
> To give to the bird of the desert his share:
> Though he warbles not in a verdant land,
> And is never leash'd to a lady's hand.”
>
> Eliza Cooke.

The number of birds which really inhabit the desert is very limited. Of these there are only two species which follow the camel as it enters that arid region, so remote from the outer world: they are the cunning Raven of the desert, and the Vulture; both may be regarded almost as birds of ill omen. They follow man miles into the interior, often as far as the first well or oasis, where they are replaced by other species. In the desert itself we only meet with small, active, cheerful little birds,—Stonechats, Coursers, Larks, and several members of the Gallinaceous family; all these bear the stamp of the land they live in: their colours usually assimilate to that of the sand, varied at the most with black or white; they are spread over a vast range of the sandy ocean, for food is scarce, and distributed over a large area; they show themselves true children of the desert in their habits and modes of life.

The Sand Grouse is one of them, and is well worthy of our especial attention, inasmuch as it also belongs to our European Fauna, even to that of Germany itself: it is beautifully built, varied in colouring, noisy, impetuous, and restless in its character.

The different species of Sand Grouse seem to form a link between the Pigeons and the Gallinaceous birds. They possess the small beak, sharp-pointed wings, and loose plumage, of the Pigeons, whilst their colours are often varied and very beautiful; the head, feet and tail resemble those of the Partridges: they partake, however, so much of both families as to seem a veritable cross between the two, so to speak. The colouring of the plumage is one dependent on the laws of necessity, and is, on this account, more or less uniform in character. The upper part of the breast is—with the male usually, and almost always in the case of the female—of isabel colour, merging sometimes into a grayish tinge, at others into a pale yellow; the lower portion is often black. This ground-work of colouring is varied and beautified in many ways, by bands, stripes, blotches, spots, small streaks, and fine undulating lines. Decorative plumes are also not wanting, for the centre tail-feathers often attain an immense length; in short, our friends, the Sand Grouse, are extraordinary beings. They all, however, bear the impress of the desert in so marked a manner, that anyone who has seen one species can generally immediately recognize any other as a desert bird.

In Europe, indeed in Central and Southern Spain, two species of Sand Grouse are to be met with, both remarkable for size and beauty; as in Africa, they are birds of passage, which continent must be regarded as their true home. One of these species bears to this day its Arabian name (*Pterocles alchata*); the other, the Sand Grouse *par excellence* (*Pterocles arenarius*), is widely distributed throughout all the south of Europe; on one occasion, indeed, reaching the heart of Germany, as far as Anhalt, as though to pay our naturalist, Naumann, a visit! When we describe the habits of one species, that information will suffice for all the others.

The Sand Grouse inhabits steppes and deserts, and is only met with, on cultivated lands, during harvest time. Their favourite haunts are desert plains, amongst the dry, hard reed-grasses, and in uncultivated fields. In Spain they frequent similar localities, such as the "Campo," a tract which may be called little else than a desert. They are rarely found singly or in pairs, but usually in large coveys or packs, numbering from fifty to a hundred individuals. As a rule, they soon discover themselves. When frightened the whole pack rises, flying easily, but making a strong rushing or whistling sound with their wings, while loudly uttering their call of "khata, khata, khata," to which they owe their Arabian cognomen; they pursue their course for five or ten minutes, and then alight again. The Sand Grouse is shy only when it is much persecuted; in the heart of the desert, where the visits of men are few and far between, they allow the camel and its rider to approach within a few paces.*

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* The species which Mr. W. T. Blanford and I met with, on the coast region of the Red Sea, on our march between Ain, Amba, and Massouah (*Pterocles Lichtensteini*), was not found in large flocks, but in small coveys of from five to six birds; at times they occurred in twos and threes, excepting when they came to drink at the springs, at which time, for the space of a quarter of an hour or twenty minutes, they kept arriving and departing in coveys of perhaps eight to ten in number, following one another in almost a continuous stream, so that when the last rays of daylight had disappeared, and all had quenched their thirst, some hundreds must have visited the spring or water-hole during that short space of time. Their flight is the most rapid and uncertain of almost any bird I know: the velocity is something tremendous, and, as they will carry off a great deal of shot, they are not easy to bring down, especially in the dim twilight. Their flight resembles that of the "Blue Rock" more than any other bird I can think of, and is, if anything, still stronger. When shooting in the daytime we often met with them, when they would lie so close as to allow us almost to tread on them. The march I here mention was undertaken in August, 1868.—*W. J*

A person accustomed to observe these birds, and endowed with a quick eye, will, on approaching a covey on the ground, notice several old males watching the intruder with outstretched necks, and that, on a nearer advance, these suddenly squat, and, with the entire covey, become instantly invisible. I have hunted and shot Sand Grouse hundreds of times, but was on every fresh occasion more and more astonished, at the readiness they showed in hiding themselves from view, their dress being, doubtless, on these occasions, their best friend. The Sand Grouse need only squat close to the ground, the colouring of which is matched in every shade by its plumage, and remain motionless, in which case the bird seems part of the very soil on which it lies, and is, for the time being invisible. In this manner, all members of this interesting family, as well as many other birds, manage to elude the vigilance of their pursuers: they allow the hunter to approach so near, that if he can see them in time he may shoot them with a pistol. Suddenly one of the males rises from the ground, cries "khata" once, and then the entire band stream away like a whirlwind, calling loudly as they fly. It is only when looking at these birds through a spy-glass, or from a hiding-place, when they think themselves unobserved, that one can manage really to watch their habits and ways. They run about hither and thither, like other members of the Gallinaceous family, the females and young birds without a care, while one or other of the males now and again look to the safety of the band. They scrape about with their beaks, like Pigeons, and with their feet like other Partridges, in search of food, principally seeds, plucking the tender shoots of plants, and picking up insects; they clean and preen themselves, bathe, so to speak, in the sand, basking in the sun, sometimes half on their sides, half on their bellies. The appearance of a bird of prey upon the scene is the signal for the whole covey to become instantly transformed, as it were, into clods of earth or stones: not a bird moves, all is silent and still. The enemy disappears, and the old game begins afresh.

The flight of the Sand Grouse is very easy, often rather high and rapid, accompanied with a whirring sound of the wings, which reminds one of the Partridge, though louder than that of our old friend. Morning, mid-day, and evening, at certain regular hours, the covey betakes itself to the water-holes to drink. At a desert spring one may safely count on seeing some hundreds come to quench their thirst in the course of an hour. Each covey remains but from one to two minutes by the water-side; they run to the spring, drink like Pigeons, retire, and fly away again the same way that they came. They roost in the grass-covered portions of the desert; in Africa, often in the neighbourhood of villages; but in Spain, always far away from them. They seem to require but little sleep, for they may be heard on moonlight nights at all hours, and when frightened at night can take good care of themselves.

In North Africa these birds breed at our spring time, and in Central Africa at the commencement of the rains, which season takes the place of our spring. They breed in pairs, and are not polygamists, though I have been told that they live in companies even during the breeding season. We may rest assured that the males fight a good deal amongst themselves, for such as I have seen kept in captivity were very quarrelsome at breeding time, seeking to drive off all their cage companions. I was not fortunate enough to find a nest myself: the Arabs described it to me as being little else than a shallow cavity scraped in the sand, without any lining, which agrees with the accounts given by English naturalists. The female alone sits, but the young are tended by both parents. As soon as the breeding season is over, these birds are seen in as large bands as before. The eggs of the Spanish species, which I have met with in collections, were of an isabel-yellow ground, spotted with reddish yellow, brown, and violet, these spots often being confined to the larger end. The downy dress of the young is very delicate, both as regards colouring and marking, the sandy yellow ground on the upper parts being covered with blackish crescent-shaped and star-like marks, while underneath it is whitish.

The Sand Grouse's worst enemy is—as usual—man; besides which it is harried by Eagles and Falcons by day, and by jackals and foxes by night. The flesh is good eating, though very hard, resembling that of the Wood Pigeon more than that of the Partridge. They may be shot with the gun; and, inasmuch as they squat close together, one may, if fortunate, kill as many as from six to fourteen at a shot. Those which are not killed outright are useless to the collector, for the wounded birds flutter to such an extent as to lose almost all their feathers, the latter being very loosely attached to the skin. The Arabs are very fond of these birds, and relate many pretty legends about them: they especially look upon them as guides to water in the desert, and most justly so.

Sand Grouse soon become accustomed to captivity, and are in every respect amenable to circumstances: they may be easily fed on grain and green-meat, and agree well with other birds; they cannot stand wet, though well able to bear the cold; they keep healthy for years, and breed without much difficulty in cages adapted for that purpose. They may be regarded as some of the most agreeable and graceful pets amongst the denizens of the aviary.

CHAPTER VIII.

THE HAZEL GROUSE
(*Tetrao bonasia*).

> "Wie sah ich's streichen nah und fern
> Hier auf die Bäume gern,
> An Schlucht und Höh', am Felsenrande,
> In seinem bunten Schmuckgewande
> Mit seinem zarten, weichen Fleisch,
> Das ich zurück zur Waldung heisch!—
> O, wie vermiss ich nun sein Schweifen
> Mit seinem Volk, sein trautes Pfeifen,
> Das mir so pflegte wohlzuthun!
> Wo blieb mein schönes Haselhuhn?"
>
> WELCKER.

THE Hazel Grouse is one of those European birds which are becoming rarer, with each succeeding year, in those localities where it used formerly to be plentiful; in some, indeed, it will soon be extinct. This bird is allied both to the magnificent Capercaillie and the Black Cock, differing from both in one point, however, and that is, that the plumage of the male is somewhat similar to that of the female: it is bright, though in the highest degree delicate. The principal colours are brown, rufous red, ash gray, reddish gray, white and black; these are intermingled in the most varied and intricate manner possible, so that it is only here and there that one tint is especially predominant. This motley dress is excellently adapted so as to hide the bird from observation, for at a short distance it as closely resembles the colour of the ground of the forest as that of the Sand Grouse does the sand. The male may be recognized from the female by its black throat and larger crest at the back of the head, as well as by the beautiful scarlet eye-brows, which it possesses in common with the Capercaillie and the Black Cock. The Hazel Grouse is the smallest of our woodland Grouse; the length of the male being at the most sixteen inches, and the breadth across the wings two feet; whilst in the female the measurements are less: thus this bird does not in any way exceed a third of the size of the Black Cock.

Fifty years ago this beautiful bird was to be met with in all the mountains of Germany, whereas now it has become almost extinct, in localities where it was formerly not at all rare: it is preserved now more than ever, yet this act of protection on the part of man does not seem as yet to have produced the desired result. It is still plentiful in Norway, Sweden, Finland, Russia, Prussia, Poland, Hungary, Northern Italy, France, Switzerland, and Central Asia; over the whole of Germany, however, it is only to be found occasionally. This bird mostly affects the southern slopes of richly wooded mountains, especially those covered with greenwood, and interspersed with boulders and rocky precipices, where wild berries are abundant: these are its favourite haunts. One may always feel sure of finding Hazel Grouse in localities where one has met with them before. It is a resident bird, only partially migrating, in families, late in the summer or in autumn, and then it is never found in places unsuited to its habits. Towards spring the covey breaks up into pairs, and these prepare to breed. Unlike other species of Wood Grouse, they are not polygamists.

The Hazel Grouse is one of the shyest of our game birds, after it has once been disturbed. Only an adept can manage to get a sight of it, for at the least sound every member of the covey retires as soon as possible to a place of safety, where it squats, either close to the ground, or, in some cases, on a large branch of a tree, conscious of the similarity which exists between the colouring of its plumage and its place of refuge. When running it carries itself in a stooping posture, as does the Partridge, and, like all the family, is remarkably quick on its legs, getting over a long distance in a very short space of time. Its flight necessitates a very rapid motion of the short, rounded wings, and is on this account noisy and laboured, though for all that somewhat rapid. The Hazel Grouse will not rise on the wing unless forced to do so, and seeks as long as possible to evade pursuit by running. Its notes may be termed rich, inasmuch as both male and female manage to whistle a regular ditty; it is true that this is difficult to express in syllables, but it is translated by our South German sportsmen into the sentence: "Zieh, zieh, zieh, bei der Hitz in die Höh;"* which, indeed, it somewhat resembles. The call-note of the male, in pairing time, is a long-drawn whistle, followed by a chirp: "ti hih ti ti ti ti." The cock bird "plays" or "drums" like other Wood Grouse, and is just as jealous, but is at the same time faithful to his mate. As soon as the marriage is consummated the male leaves all the business of nursing in the hands of his partner. In the month of May the female seeks some quiet, secluded spot, where she scrapes out a hollow, which she lines with a layer of dry leaves and plants, without any art whatsoever. She lays eight or ten, rarely twelve or fifteen, eggs: these are small, smooth and shining, of a reddish brown yellow, spotted and stippled with red and dark brown; they are carefully incubated for fully three weeks, and are covered over whenever she leaves the nest, with the same materials as the latter is composed of. The newly-hatched young are only so long brooded as is necessary to dry them, and when this is accomplished the mother immediately leads them off into the grass and low scrub, where they may be hidden from the eye of any curious intruder. Should an enemy appear on the scene, the mother acts like the Partridge, feigning lameness, until the young are out of harm's way: with a low, piping call she keeps the little family together, and teaches them to find their food. In bad weather the chicks are gathered under the maternal wing. The young ones soon learn to fly, or at least flutter, and take care of themselves, when the whole family betakes itself to the top of a tree to roost. At first, the young feed exclusively on insects; later on, they eat buds, catkins, juniper berries, wild strawberries, bilberries, wild raspberries, currants, blackberries, &c. They scrape the ground more than other Wood Grouse do, in this respect more resembling the Pheasants. As soon as the young birds have attained a certain size the male returns to his family, when all remain happily united till next breeding season.

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* The English equivalent being: "When 'tis warm, get up higher!"

The flesh of the Hazel Grouse is looked upon as the most delicate of all winged game, and it is probably on this account that this lovely creature has so many enemies. Goshawks, Falcons, Buzzards, Ravens, Crows, Jays, foxes, lynxes, wild cats, martens, and weasels, all harry the bird unremittingly, and man persecutes it fully as much as they do. The Hazel Grouse is shot from a hiding place, by imitating its call-note, as also by lying in wait for it at the "playing" ground; the woods are driven for it; it is caught in Partridge nets, springes, nooses, and other traps; in short, a hundred means are made use of to capture this delicate bird. Adult birds may be caught and tamed, living for years in confinement if properly managed: they are pleasing, from their activity and the variety of their postures, but they always remain timid and shy. Young birds are far too tender to allow of their being reared. Yet much might perhaps be done towards repopulating our mountains with this bird, if tamed adult birds were turned down in suitable localities, or eggs placed under sitting Partridges or black game.

CHAPTER IX.

THE GREAT BUSTARD
(*Otis tarda*).

> " Save that the Bustard, of those regions bleak
> Shy tenant, seeing by the uncertain light
> A man there wandering, gave a mournful shriek,
> And half upon the ground, with strange affright,
> Forced hard against the wind a thick unwieldy flight."
>
> WORDSWORTH.

> " The big-boan'd Bustard then, whose body beares that size,
> That he against the wind must runne, ere he can rise."
>
> DRAYTON.

THE European representative of the Ostrich is the Great Bustard,—a noble, powerful bird of handsome plumage. It is a well-known inhabitant of extensive plains, and in many localities is regarded by agriculturists as a noxious bird, and justly so. Besides inhabiting Germany, it is also found distributed over the greater part of the southern and eastern portion of our continent, Central Asia, and North-western Africa. It stands alone in Central Europe, with the exception of another smaller, but somewhat allied, species,—the Little Bustard (*Otis tetrax*). Other members of the family are much more common in Africa, where there is scarcely any extensive and desert plain on which some one or other species does not occur; and these are localities where Bustards may be regarded as amongst the most common of birds. Our Great Bustard is also to be met with in the more cultivated districts in considerable numbers, thanks to the great shyness and cunning by which it manages to escape from the clutches of man!

This bird has a heavy appearance, though by no means plump, but rather muscular and powerful. The adult male—with his moustache, inflated throat, and large, outspread, fan-shaped tail, carried well up—is worthy of the attention universally bestowed upon him: his deportment is in the highest degree remarkable, and his bearing proud. The female is smaller, and of far more modest pretensions. All Bustards vary very much in weight and measurements, according to their age and sex. A very old male, of the species we are now describing, will measure three feet six inches from the tip of the beak to the end of the tail, and from wing to wing eight feet; while its weight may reach as high as thirty-two, and on some occasions as much as thirty-eight, pounds, though as a rule it does not exceed from twenty-two to twenty-four pounds. The adult female usually weighs from a fourth to a third less than the male, and measures sometimes two feet nine inches in length, by six feet across the wings; her weight being scarcely more than twelve pounds. The plumage of the Great Bustard is, on the upper parts, yellowish, with the feathers edged with black; the under parts are of a pale clay-colour; the head, upper portion of the breast, and a strip of the wing, are ash-gray; the points of the tail-feathers, and some of those of the wing, are white, while the pinion-feathers are black; the decorative insignia of the male are wanting in the female. The male is furnished with a singular membranous pouch in the throat, a so-called water-bag: this is filled with air, and so serves to distend the neck; possibly, also, to strengthen the voice, when the bird, inflamed with amorous desire, wishes to declare his passion.

With us, the Great Bustard inhabits broad, open, arable plains, which render approach very difficult. In Africa, as we have before stated, Bustards are found on extensive steppes, where they are easily hidden in the grass, which is as high as a man. In these localities one may often hear their peculiar cry in the forenoon, without being able to put up a single bird. They have regular paths in the grass, through which they beat a nimble retreat; they act with us in much the same manner when the grain crops are high enough to form a secure hiding-place. Large fields of rape-seed, which stand out the winter, are favourite resorts of theirs, from the end of autumn until the early spring. They are rarely found in swampy or mountainous districts, or in the neighbourhood of villages; they carefully avoid, indeed, every row of trees, each bush, and every well-known dell or or hollow. They only frequent open places, where the flatness of the land enables them to keep a good look out. It is only in rainy weather, when the corn is wet, that they find themselves obliged to roam the fields, broad meadows, and ploughed land; and even then they immediately make for their hiding-covert at the most distant approach of danger.

It is this excessive caution, so peculiar to the Bustard, which explains much of its conduct that appears singular: for instance, it selects the most remote plains as roosting places, never seeking them before twilight has set in, and leaving them again before the gray of the morning: these places may be recognized by the droppings of the birds. It is impossible to approach the sleeping pack on the darkest night, even when using the greatest precaution; possibly owing to the wakefulness of some of the old birds placed on sentry. The slightest sign of pursuit will cause this bird to quit the district it inhabits; and though at all times, the breeding season excepted, it is apt to shift its quarters, it can scarcely be regarded either as a permanent resident or as a migrant; this may, however, be attributable to the enormous extent of its beat. In Eastern Europe its semi-migratory movements are pretty regular.

The Bustard generally walks with long, solemn strides, though able to use its legs to some purpose in time of need, for when wounded it can tire out the swiftest dog. When walking this bird carries its neck in the form of an S, and its body rather horizontally; as soon, however, as it discerns anything remarkable, the bearing becomes totally altered: the bird, stretching itself to its full height, looks double its former size. When satisfied with food, or sleepy, the Bustard very often lies down flat on the ground, by which practice the lighter portions of its plumage not unfrequently become tinged to a brownish yellow. It has been said of Bustards, as also of Vultures, that they experience special difficulty in rising on the wing: close observation has, however, proved the contrary to be the case, for our present friend, on taking a short, powerful run, swings himself easily in the air, and glides away with a rushing sound, the motion of the wings not being very rapid. A flock of Bustards never fly in close company, each individual keeping some considerable distance from the others. When flying the body is carried horizontally, and the neck and legs stretched out to their full extent. The Bustard rarely flies at any great height above the plain, only rising to a considerable elevation when it approaches somewhat too near to a dangerous object.

The great intelligence of the Bustard is such as often to place that of man quite in the shade. All the cunning manœuvres, caution, care and patience of the sportsman, are generally frustrated by the acuteness and wariness of the bird, who weighs and estimates everything that it sees and hears, at its true value. Nothing is too insignificant for its notice, nothing too small; it trusts no creature which has ever approached it with hostile intentions, or which could possibly do so. The Bustard calculates, weighs, estimates,—in short, reflects: experience once gained is never forgotten; a danger overcome only serves to sharpen its sagacity. This bird rarely allows itself to be deceived, or to be led into committing a mistake. A sportsman disguised in female attire is looked upon with as much suspicion as a labourer; the horseman, as the pedestrian. Peasants, shepherds, and women carrying loads on their shoulders, are the only human beings which it does not distrust. It would seem as though the Bustard could distinguish between a gun and a stick, and tell the range of a rifle. Every change in the aspect of any well-known object strikes the bird, and makes it suspicious in the highest degree: a freshly-turned manure heap, a hole newly dug, will immediately cause it to abandon a locality that it has frequented for weeks together. The senses of hearing and smell seem less acute in this bird than that of sight, for one may sit in a hole covered with earth, in the midst of a flock of Bustards, and smoke tobacco, even, without being winded by them, or the hiding-place being discovered.

The Great Bustard feeds on plants, and insects of all kinds, buds, tender leaves and stalks, seeds, fruits, grasses, grain, clover leaves, cabbages and turnips, are all eaten with avidity; in summer it devours a great deal of green food, and in winter this is preferred to all other kind of nourishment. In the last-mentioned season it grazes in the rape-fields from seven in the morning till mid-day, when it retires to digest its breakfast on some favourably-situated ploughed field, returning, however, again to the rape-fields, where it remains till the evening, when it retires to roost, often some two miles off.* The Bustard can only be induced to quit a good feeding-place after repeatedly being disturbed, though it will retire for several days on the first occasion. This bird grazes like the Goose, only using its feet in the winter to scrape away the snow; it is, however, unable to accomplish this when the upper crust is frozen over. The Bustard is at all times given to swallowing a considerable number of small quartz-stones, even pieces of metal and lost coins, so as to facilitate digestion; it slakes its thirst probably with dew, inasmuch as it is never seen in the neighbourhood of open water-holes. The Bustard cleans its feathers with dust, scratching and basking in the same manner as fowls do.

In the month of February the conduct of Bustards changes in a striking manner. Their hitherto social habits of life become altered, they are seized with an irresistible restlessness, an impulse seems to force them to erratic wanderings. The males begin to think of seeking out partners, and fight at times with their rivals. The large flocks become daily more and more broken up and dispersed; smaller ones are formed,—and one flies here, another there. The carriage of the male is now proud indeed: he postures before the hen birds with swollen throat, and fan-shaped tail spread out like a wheel, much after the manner of a Turkey Cock; he takes wing unwillingly, and recommences operations as soon as he alights again. He looks proudly around on all sides, seeking a rival who should dare to try to wrest from him the swain's reward: if one appears, a fight ensues; they pursue one another on either side, striking with the legs and wings, and biting; they chase each other on the wing, and dashing together perform evolutions in the air more like those of a bird of prey than those that one would expect from a creature so heavy and so addicted to *terra firma*. The conqueror now pairs off with his spouse, and they both quit the company of the younger birds, which have not yet arrived at maturity: these latter remain together in companies of from three to five in number. The former quiet behaviour and extraordinary wariness, which the enamoured swain had from time to time forgotten during his courtship, now returns as before. The hen bird attaches herself exclusively to her mate, and, with him, seeks out a suitable spot where to establish the cradle of their future progeny. Both birds are now always seen together, and wherever one flies the other is sure to follow. It is rare that the observer ever has an opportunity of watching the more intimate relations of their matrimonial life. Naumann states that the hen bird sits quietly down on the ground, whilst the male plays proudly round her, much after the same fashion as a Turkey Cock, amid stiff, formal bendings and scratchings of the feet, the neck puffed out and held in the form of the letter S, the moustache outspread, wings raised with the ends pointing earthwards, tail outspread, accompanied with a fanning and rustling of the wings, to which is added a deep, muffled, blustering call,—"hoo hoo hoo,"—which somewhat resembles the cooing of a Pigeon. While the eggs are being laid and the hen is sitting, the male keeps watch, remaining true to his allegiance, never pursuing other females of his species. The hen bird is alone occupied with the business of incubation, but as soon as the young are hatched the male takes mother and chicks again under his charge. The nest is always situated in some level field, far remote from any village,—as far, indeed, from the presence of man as possible. Old birds are always more cautious in the selection of a nesting-place than younger ones, though these latter cannot be accused of carelessness in their choice. As soon as the young corn is high enough to hide the female when sitting, she scrapes a small hollow in the ground in some large, isolated field: this cavity is occasionally lined with stubble or a few plant-stalks. In the middle of May she lays her two rather large eggs: these are of a pale gray-green, covered with smeared spots of a darker shade; they are strong, coarse-grained, and devoid of polish. It is rare that three eggs are to be found in a nest, and even in such cases there are never more than two of them hatched. The female always approaches the nest with the greatest caution, and glides off it with similar care: she sits hard for thirty days, during which time she is often visited by the male, who does not, however, feed her; she seeks her own food amongst the high corn, in as close proximity to the nest as possible. The hen bird glides quietly from the nest on the approach of danger, and nest and eggs are instantly forsaken if the latter have been touched by the hand of man, excepting when very hard sat upon; in which case the all-powerful feeling of dawning maternal affection prevents such a catastrophe. If the first brood is destroyed, another attempt is made to rear a family, but if the season be too far advanced the pair remain childless for a time. The woolly chicks, speckled with brownish black, leave the nest after they have been dried and warmed by the mother for some little time, but remain very helpless for the first few days, after which they soon gather strength, and manage to run pretty well. The affection of the mother for her young is tender in the extreme, and she, usually so shy and wary, is now ready to risk her life, if necessary, in the defence of her beloved offspring. Like the Partridge, or the Peewit, she will feign lameness, so as to lure the intruder from the neighbourhood of the young ones, which latter, if the *ruse* be successful, soon manage to find a safe hiding-place for themselves. Further and further flutters the mother, when all of a sudden she takes wing, returning after a time to her young, who, thanks to their colour, have managed to elude the sharp glance of the enemy. After the young have been hatched about a fortnight, the male undertakes the leadership of the family, which is now doubly cared for. At first the chicks feed almost exclusively on insects, such as small beetles, grasshoppers, larvæ, &c. The mother seeks out the food for them, and may sometimes be seen scratching in search of the same. Ants' eggs also form an important item in the *menu*. After a short time the young learn to feed themselves, and then they soon begin to graze like the old birds. They soon lose their coat of down: at the third week feathers begin to appear, and by the fourth they are able to fly, or at least to flutter; as soon as this act is accomplished the mother takes them farther afield, and leads them to rich pasture lands.

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* Equivalent to four English miles.—*W. J.*

Young Bustards may be reared and tamed without much trouble. I had one in Khartoum (*Otis arabs*), which was fed with meat, and soon became very docile and confiding. It would come to me as soon as it saw me, uttering a low cry denoting its delight, and follow me like a dog all over the house: unfortunately it did not live long in captivity. The Great Bustard may be kept in a similar manner, if confined in a large enclosure over which he can lord it at pleasure. He is not suited for the fowl yard, as he will fight and quarrel with the other denizens.

In their wild state Bustards have to undergo a good deal before they are strong enough to escape from their enemies. The mother guards them from the attacks of Goshawks, Kites, and Harriers, but is unable to defend them from Eagles, foxes, and martens, so that many young birds fall a prey to these dangerous robbers. Those Bustards, however, which attain maturity unharmed must live to a great age; at least, Bustards fifty years old are not looked upon as great rarities.

The pursuit and capture of this shy and wary bird is difficult in the extreme, and rarely successful. It is a sport that calls forth all the woodcraft and skill of the hunter, and requires special weapons to enable him to attain his end. Nooses and traps are useless, as one can never tell where the flock may be, and these large birds are rarely caught in nets, so nothing remains but to use fire-arms, and with the aid of these the difficulties of the chase are not yet overcome. It is very rare, indeed, that the Bustard will allow the sportsman to come within rifle-range, and then it is only by chance that he may succeed in circumventing a flock. Good luck is the hunter's best friend, though of course he must be fertile in resources and devices, so as to deceive the cautious quarry: he will disguise himself in female attire, with a basket on his back and rifle in hand, make as if he would walk straight past the flock until within shot, or he will hide himself from sight in a cart loaded with straw, and fire at the flock from between the trusses—as soon as the vehicle has approached near enough—with his so-called Bustard rifle, a weapon of great precision. Another mode is to lie hidden in the rape-fields, in a hut or covered hole which has been prepared during the previous seed time. Bustards are easiest shot from such huts, they having been prepared like those we have before described, as used for shooting Crows out of: the birds unconcernedly approach the grass-covered mound, returning again to the field, even after a shot has laid one or other of their number low, they, not having seen the sportsman, doubtless mistaking the shot for thunder. On the steppes of Eastern Europe—after a cold, rimy night, which encrusts the Bustard's feathers with ice—this bird may be taken with greyhounds; so, at least, we are told. In Siberia, Bustards are captured with Falcons and trained Golden Eagles.

CHAPTER X.

THE GOLDEN PLOVER
(*Charadrius auratus*).

"....... and round and round
The Plovers wheel, and give their note of joy."
SOUTHEY.

Next to the Bustards come the Plover group, because, in a diminutive form, they resemble them in a great degree in shape and make. The Golden Plover is one of the most beautiful of this family: it is a handsome bird, not exactly rare, inhabiting the northern portion of our native land, and is about the size of a Missel Thrush or a Turtle Dove, measuring from ten to eleven inches in length, and from twenty-three to twenty-four inches across the wings; its plumage is tasteful and gay: on the back it is of a greenish yellow, thickly speckled with golden spots; the head and neck are somewhat lighter, and the spots still more beautiful, that is to say, of a pure gold-colour; the sides of the head, the throat, and breast, are of a deep black, while the bands across the forehead and eyes are white; the beak, legs, and three toes, are black: such is the plumage of the adult bird. The young birds are distinguished from the old ones by being of a lighter colour underneath, and by the numerous golden-green specks which cover the neck and breast.

The Golden Plover inhabits the whole of the northern parts of Europe, Asia, and America. In the winter it migrates southwards, to Tartary, Persia, India, Africa, Central America, &c.; some few remain in Southern Europe, chiefly in Spain and Sicily. This bird visits Central Germany only during its passage southwards. In the summer it is common to all northern countries. Those immense morasses called the Tundra shelter thousands upon thousands of pairs, furnishing them food in abundance during the summer months. These districts may be compared to the sandy plains of the south in their poverty and desert character, though at the same time they teem with animal life in the summer season. During the winter the lower orders of living creatures are buried deep beneath the snow, while the Willow and Common Ptarmigan migrate with the lemming or the reindeer towards the coast, as it would then be impossible for them to find sufficient sustenance. After this comes spring and the short northern summer, when the sun spreads its rays far away over the North Pole, bathing those plains in its radiance both day and night. Ice and snow vanish with a rapidity which can be scarcely credited, though the heat is not strong enough to evaporate the vast quantity of water thus produced, so that these regions become converted into one vast morass, with only here and there a dry spot on the few prominent portions of rising ground. At this season insect-life awakens from its long, death-like slumber, and myriads of gnats and mosquitoes abandon their larva-cases, which afforded them shelter during the winter. Thick swarms of these creatures float over the swamp, so dense, indeed, as literally to fill the air with living clouds. They cover every leaf, plant, stalk, and blade of grass, in hundreds and thousands, whence they attack, and if possible demolish, every other living being that presumes to invade their territory. These insects form almost the sole inhabitants of the Tundra; scarcely a beetle is to be seen, or a butterfly wending its zigzag flight over the marshy ground. At this season men and quadrupeds alike flee this pestered district, and seek peace and quiet near the sea, where in winter they sought warmth and food. Only a few species of birds take up their abode on the morass, and wage a war of extermination against these blood-thirsty nuisances, who are powerless to annoy them. These birds are the Lapland Bunting (*Emberiza lapponica*), the Dotterell (*Charadrius morinellus*), and our Golden Plover: they feed the whole summer long on nothing else but mosquitoes and their larvæ, and on these they rear their young. Here, in the deepest solitude, scarcely disturbed by a human being or a bird of prey, they live, rejoicing in a superabundance of food, bringing into being a fresher and a higher life to the desert. They are as suited to these morasses as the Courser and Sandgrouse are to the sandy desert, serving to render the dreary appearance of the locality more striking than ever. When wandering through these swamps one hears their sad, and almost plaintive cry, resounding on all sides, and that of the Golden Plover fills the air by night as well as by day. This bird is to be met with wherever one bends one's steps, in pairs, families, and flocks, as the summer advances. In Lapland, according to my estimate, in favourable localities several thousand pairs of these birds inhabit a single square mile, for the beat of one couple is very limited, being hardly two hundred paces in extent perhaps.

In Lapland the character and habits of the Golden Plover are those of a marsh bird, which is not the case with us, where it only occasionally frequents the neighbourhood of swamps, much preferring dry ground far from water, even though it has to pay several visits to the latter element during the day for the purposes of bathing and slaking its thirst. The favourite spots frequented by the Golden Plover are barren heaths, where the scanty herbage does not rise to any great height above the ground, peat moors, dry fens, and extensive waste lands.

Like all the allied species, it is a cheery, active bird, ever on the move both day and night. The Golden, as as well as the whole family of Plovers, obtain their soubriquet of "Regenpfeifer" (Rain-whistler), from the fact that they are most clamorous before rain, though they also let themselves be heard both loud and often in fine weather, especially towards evening. One must have heard the note to be able to describe it, for it cannot well be rendered in words or syllables: it is a clear whistle, twice uttered, resembling "clieu, clieu," or "clieuä," three times in succession, and is heard a long distance off. Thus the Golden Plover discovers itself to anyone, even to one who may not actually be engaged in seeking out its abode: the call is common to both sexes. The bird is not easily visible at any great distance, as the colour of its plumage so closely resembles that of the ground on which it is found, and would, but for its call, be difficult to find. With us, however, it is not nearly so tame and confiding as in Lapland (where it is either impudent or silly enough almost to look down the gun-barrel of the sportsman), but takes good care to keep out of harm's way, rarely allowing that suspicious individual—man—to approach within gun-shot. Its movements are rapid and graceful: it runs as fast, or faster, than a man can walk, and when so doing carries the body rather horizontally, with the neck drawn in, moving its legs so rapidly as to render them almost invisible. Its flight corresponds with its walk, being light, active and sure, though variable. The Golden Plover, however, never rises until convinced that running will no longer serve its purpose, or when repeated pursuit has already rendered it distrustful and timid.

Companionship seems necessary to its existence, as it is only when breeding that the Golden Plover is seen in pairs; at all other seasons it is met with in company either with others of its species, or those nearly allied to it. When separated from a flock of its own species it will occasionally join with birds belonging to quite different families. I have seen the Golden Plover associating with Larks, and even Sand Grouse; and in Lapland with the Lapland Bunting. A single bird is always less shy of approach than a flock, amongst which there are sure to be some individuals whose experience of this wicked world and its ways causes them to look upon everything they see with distrust. These wary individuals give warning of danger by a short "clieu," not only to their companions, but to other birds, thus greatly annoying the sportsman, for they are as shrewd and clever as only members of their genus can be; they possess a capital memory, and do not easily forget any insult they may have once been subjected to. They easily distinguish the shepherd from the gunner, or a harmless animal from one likely to do them an injury. When they rise they seem also to banter their pursuer, inasmuch as they usually circle round and round in the air, as though they intended to alight, instead of which, after performing this antic, they dart off with the rapidity of an arrow. Thus the pursuit of the Golden Plover is, under all circumstances, difficult, and requires experience and good shooting to render it successful. This is at all events necessary at home, and one must personally have experienced the difficulty of getting within range of this bird to be able to appreciate the truthfulness and confidence with which, in its native land, it permits the approach of the very occasional visitor, and allows him to carry out his blood-thirsty purpose.

By the end of April the Golden Plover pairs off, when the male utters a call that may almost be termed a song; simple, it is true, and somewhat resembling "talüdle, talüdle, talüdle, talüdle," &c., though this is but a feeble representation of the reality. The amorous bird floats in the air on motionless pinions in large semicircles round the nesting-place, or sweeps slowly in a slanting direction earthwards towards its partner, who knows how to appreciate these aërial attentions. She, in return, attaches herself with unfailing fidelity to her loving swain, following him in every movement, whilst he, on the other hand, never leaves her for a moment. The female is usually occupied with the construction of the nest when the male is paying his court, and thus takes pleasure in what is most worthy of enjoyment; the constant lover still continues to sing his love-ditty, even while the female is sitting.

The small, shallow, cup-shaped nest, placed on the ground, and lined, but rarely, with a few stalks of grass or tender roots, is difficult to discover, and the more so, as one is apt to find several similar hollows, minus eggs, in the neighbourhood of the real nest. It is only a practised eye that easily discovers the true nest, for it undertakes the search in a systematic manner, guided by former experience. The eggs, four in number, are very large in comparison with the size of the bird, and larger than those of the common Lapwing or Peewit. They are smooth, and very pointed at the small end; the ground is of a dull olive-yellow, speckled and blotched with reddish brown spots, which form a thick belt round the large end. The eggs are always deposited in the nest, with all the pointed ends laid together towards the centre, and are hatched in from sixteen to seventeen days, the female leaving them exposed to the heat of the sun when opportunity offers. The parti-coloured, downy youngsters are led from, and reared outside of, the nest, by the parents, as soon as they have become dried.

The strategems made use of by the mother, when seeking to preserve her brood from the clutches of an enemy, are truly touching. When sitting she never rises from the nest itself, but always runs for some distance in a crouching posture before she ventures to take wing, while the male flies close round the intruder, and tries in every possible way to draw off his attention. Both the old birds show the greatest apparent distress, and are excessively bold, dashing down, like the Peewit, even at human beings. When the young are first hatched one has a much better opportunity of observing the different artifices by which the parents seek to preserve them from harm. I never, but on one occasion, could bring myself to rob a Plover of her young, for the heart-breaking concern evinced by the parent birds always moved me to pity on their account. As soon as one approaches the brood, the mother may be seen in a crouching attitude with pendant wings, as she runs staggering along a few steps in front of you: she acts as though scarcely able to make use of her limbs,—as if lame, in fact,—squats for a moment or two as though paralysed, and then hops and flutters along a few steps further, with the greatest apparent difficulty. There is no sign to be seen of the tiny family, for after the first three or four days of their existence they have already become adepts in the art of concealment, and in this they are so well aided by the colour of their downy plumage, which resembles the earth itself, being stippled with golden yellow and black spots running together into three or four stripes, that the sharpest eye has much trouble in discovering the little creatures. The older they get the more they learn of the art of making themselves invisible: they creep under heather and other plants, or even stones, and crouch in small hollows, where they are generally safe, for the mother, and when necessary the father, undertakes to lure the enemy from their neighbourhood. I was greatly amused one day at seeing two Lapps, who were guiding me across the morass to their home, run with the greatest glee after a hen Plover, who kept tumbling and fluttering before them, using every posture and stratagem of which she was capable. I let them follow the pretended lame one some two or three hundred paces, and then saw her, to my great joy, suddenly rise, and with rapid and certain flight return to her young ones. These I had in the meanwhile succeeded in capturing, and held them in my hands. What dire lamentation and woe! How utterly miserable the poor creature appeared! She alighted within three yards of me, limped, tumbled about, fairly crawled on the ground in front of me, flew in narrow circles around my head, returning again and again. I now let one of the young ones go, and it immediately ran to its mother, she receiving it, like an old hen, under her out-spread wings, ran a few steps, and—the little one had again disappeared. During this short run under cover of the mother's wing it had found an inequality in the ground, and availed itself of it for the purpose of concealment. I now let the mother hide each youngster one after the other, and, when all these had passed safely into her custody, continued my way rejoicing over the pretty and touching exhibition of maternal affection I had just had the pleasure of witnessing.

After the autumn moult the young birds gather together in considerable flocks, and soon commence their winter journey; the old birds usually follow much later. Their winter quarters are the barren heaths and moorlands of the countries I have already mentioned.

The Golden Plover, like all other allied species, does man no harm whatever; on the contrary, its delicate, well-flavoured flesh is much sought after. During my journey through Lapland I fared like Lucullus, for all my dishes were composed of this exquisite game. The latter is highly estimated by others as well, and on this account the Golden Plover is always eagerly pursued. Unfortunately, man is not the only enemy that this bird has, for it also falls a prey to Falcons, predatory mammals, Ravens, and Skuas, the latter creating great havoc, at least amongst the young birds.

The Golden Plover is a most interesting and amusing pet. It soon becomes accustomed to confinement, feeds readily, is easily tamed, and if allowed plenty of fresh air in the summer time, will live several years in a room. Young birds soon learn to feed on a mixture composed of chopped worms, wheaten roll, carrots, cooked bullock's heart, and ants' eggs.

CHAPTER XI.

THE WHITE STORK
(*Ciconia alba*).

> "Who bids the Stork, Columbus-like explore
> Heavens not his own, and worlds unknown before?
> Who calls the councils, states the certain day,
> Who forms the phalanx, and who points the way?"
>
> POPE.

No book on Natural History, intended for family use, is complete without giving some account of the children's friend—the Stork. Everyone is acquainted with it,—at all events in pictures,—and all love it. Its arrival and departure is still, and has been for a thousand years, a sign of the seasons, an event in the village, and a red-letter day in the family calendar.

I need not describe the form and colour of the Stork, because both are so well known; but of its habits and ways, nest-building and migration, there is much to be said; for though it inhabits many countries of the Old World,—Europe, from the south of Sweden to the southern and western borders of our continent, and the whole of Central Asia as far as Japan,—and migrates far into Africa, still it is not known in all villages, nor is it a resident species in every locality. As in England, so in many parts of our fatherland, it does not take up its regular abode, being only a passing visitor while on its migratory journey, at which time it usually soars at so great a height as only to be recognized by the practised eye; whereas in Prussia, Oldenburg, Hanover, as well as the remaining portions of Northern Germany, it is, on the contrary, a common bird. It is fond of a temperate climate, and is especially unable to stand any very great degree of cold; on this account it undertakes its extraordinarily long journeys every autumn.

The Stork reaches us between the 20th of February and the end of March, and in some years as late as April, in accordance with the mildness or severity of the weather. Its arrival is generally sudden, and it is rarely that anyone sees this feathered penate drop suddenly from the clouds on to the roof. The nest is sure to be the first place where the Stork is seen, whether that be situated on the top of a house or on a tree.

The Stork is one of the noblest members of the family to which it belongs. Its carriage is stately and dignified; the neck is usually carried in the form of the letter S; but when the bird is out of temper or not in good spirits it is held very low down, so that the head rests on the back. When walking, the Stork looks grave and important; the stride, it is true, is long, but measured and slow, and is never hastened, except when its prey seeks to escape. It rises from the ground with one spring, spreads its wings, stretches out its long neck and legs, sweeping silently off with a few slow beats of its pinions, often rising in a beautiful spiral line of flight. It is impossible to conceive a more beautiful sight than that presented by a flock of Storks commencing their migratory flight. In Egypt, Nubia, and in Central Africa, I have often seen them in thousands together, and watched them on the wing. The mass swarms in apparent quiet, though every possible trick of flight is to be observed, and all imaginable postures may be seen. In this manner the whole company whirls and floats rapidly forward on its journey, without betraying any apparent exertion, thereby awakening in the heart of the spectator an irresistible longing to be capable of such exquisite motion.

The striking and inexplicable *penchant* which the Stork shows for the company of man, and which is especially demonstrated during the breeding season, is not alone peculiar to our bird, for in Central Africa I met with an allied species (*Ciconia Abdimii*) which lived on the same intimate terms with the native inhabitants, nesting on the top of their skittle-shaped straw huts, or on the crowns of the trees which stood in the centre of the villages. The assumption that the Stork simply seeks a safe foundation for its immense nest on the summit of human habitations is not sufficient reason, for that might easily be found on ancient oaks and other trees; it appears to me far more probable that the bird's own cleverness is the motive. The Stork thoroughly understands the art of accommodating itself to the society of man, knows whether we are well-disposed towards it, and if we are glad of its company or not: a Stork which but yesterday avoided man with the greatest care, to-day—when an old wheel has been placed on the house-roof—enters into a bond of intimacy with him who it feared so much before. Whenever this bird is unmolested and petted—and when does this not occur?—it shows the greatest confidence, though, like all other long-legged birds, it is very wary. Naumann once saw a man repairing the roof of his house without his causing the least fear or anxiety on the part of a female Stork, who was sitting on her eggs. The Stork learns to know and distinguish the different members of its host's family, greets with pleasure such persons as are kind to it when they come into the yard, and appears to fulfil with pleasure the *rôle* of a pet of the human race.

Where, however, the Stork's social relations with man are not so intimate, its conduct is quite different. In such localities it will scarcely permit the approach of peasant, shepherd, or child, and avoids the gunner with the greatest care. The closer an enemy approaches the more cautious it is, and it becomes a matter of difficulty to shoot with a rifle one that, under other circumstances, would greet you in a friendly manner from the top of your house. Storks are exceptionally shy when on the "passage," unless general dearth of food renders them otherwise.

One is apt to regard this bird as an inoffensive individual, whereas it is, on the contrary, very violent and spiteful. Storks have been known to come and seize strange nests by storm, murdering the young in them, in spite of the desperate resistance offered by the parent birds. The Stork is not very peaceably disposed towards those weaker than itself, and will even attack those stronger, when driven to close quarters. A wounded Stork fights bravely, striking furiously with its beak at the eyes of its assailant. Many Storks are excessively quarrelsome, and will fight to the bitter end with those of their own species, and it not unfrequently happens that in such duels one combatant leaves the other dead on the field. The ways and means by which they obtain their food, as Naumann suggests, make murder a habit with these birds. They are robbers in the fullest sense of the word, for they feed entirely on animal food, despising anything in the way of vegetable diet.

Frogs, newts, lizards, slow-worms, adders, snakes, earthworms, leeches, fish, moles, mice, young rabbits, leverets, young birds, insects of all kinds, snails and other mollusks, aye, carrion even: all these are devoured by the Stork. It sneaks everywhere after these creatures, and keeps a sharp eye on the slightest movement in the grass or young corn: as soon as anything moves, down comes the beak, which rarely misses. Occasionally it will pursue some flying animal with hasty steps. The prey is generally killed with a single blow of the beak. The Stork will not eat toads, though it detests them to such an extent that they are killed whenever it comes across them: in small ponds one may often meet with numbers of these creatures, still alive, but bearing terrible marks of the ill-usage that they have received at the hands, or rather the beaks, of Storks. Snakes are first favoured by our friend with a good blow on the head, and then another on the spine, after which they are swallowed, when he troubles himself but little about their writhings, which are often continued in his gullet! If a Stork happens to swallow an adder alive, and is bitten by it in the throat, it suffers a good deal, but does not die from the effects of the wound. This bird is so ravenous that it will swallow from fifteen to twenty frogs one after another, and is just as greedy with fish: it can put away one of the latter nine inches in length, in its capacious gullet; larger ones, however, are more troublesome, still it will often manage to carry off a fish of from two to two and a half pounds in weight to its young. It will capture and swallow without mercy any and every creature that it can destroy. It watches for mice at their holes, and for moles, until it can see them working, whilst its hunt for insects is unremitting. It drinks a great deal, bathes often and with pleasure, owing to which habit it always has a very clean appearance.

When the Stork knows that it is in a locality where it will be welcome, it immediately settles there, as soon as the card of invitation—a cart-wheel—is placed on the roof. On this wheel the immense nest is built. The foundation of this structure is formed of dry branches, sticks, twigs, and thorns, intermixed with lumps of earth and pieces of turf; on the top of this are laid smaller twigs, haulm, flags, some more earth, and finally the lining, which consists of pieces of dry grass, roots, dung, straw, stubble, bristles, hair, rags, pieces of paper, thread, and feathers. The whole mass is slovenly, but is very strongly put together. Both Storks gather the materials from far and near, carrying them to the nest in their beaks. One of the birds usually remains on the watch, working up in the meantime the sticks, &c., which have been brought home. They show their joy at the progress of their work by a snapping noise, which they make with their beaks.

This snapping of the mandibles serves as the means of giving vent to their thoughts and feelings to one another, for voice they can scarcely be said to possess, a hoarse, goose-like hissing note being the only other sound that the adult birds are capable of, and that is only uttered when they are menaced by attack. The snapping is very varied in its character, being sometimes slower or faster, weaker or stronger in every possible degree: this expresses every feeling of which a Stork is capable,—hunger, thirst, desire, annoyance, and rage. When much excited, the bird, while snapping, lays its neck along the back, thus throwing itself backwards, which gives it a very curious appearance. The young birds learn to make this snapping sound as soon as they are able to fly, and the old ones take the greatest pains thoroughly to instruct them in this, their language. The male bird shows his talent in bill-snapping most frequently and to the greatest advantage while courting, after his fashion; making just as effectual a declaration of the tender passion he feels towards his mate, as does the Nightingale with its incomparable song.

When the nest is finished, which is usually by the beginning of April, the first egg is laid, the whole complement being from four to five in number. The eggs themselves are not particularly large: they are beautifully shaped, smooth and fine-grained, white and slightly shiny; they are almost always clean. The female sits very close, and hatches out her brood in from twenty-eight to thirty days, during which time she is never seen far from the nest. The male keeps watch, and while his mate is sitting he instantly puts in an appearance should any danger arise, and is ready to defend her against all assailants.

It has been said of the Stork that he is a very jealous bird, who well knows how to punish any dereliction of matrimonial duty. Occasional instances which have been related of such being the case, seem to give some colouring of truth to the assertion. One story is told of a male Stork having murdered his innocent partner, because he found a Goose's egg in the nest, which had been placed there by the owner of the house on which it was built. On another occasion one of these birds is said to have assembled his friends together, who assisted in putting an end to the existence of his frail partner, after a tremendous battle, she having been engaged in an illegitimate intrigue with some other Stork. As a pendant to this barbarous picture it is said that a male Stork, after having awaited the return of his partner from her winter journey, and she failing to arrive, he forthwith contracted a fresh alliance with some other eligible lady Stork. When, however, his first wife at length returned, a treaty of peace was signed between the three, and our tall friend, like a second Count Gleichen, had the pleasure of being presented with a brood from each of his two wives. Unfortunately, the truth of such stories cannot be vouched for!

The young birds are at first fed with insects, worms, and other small animals, and later on are furnished with more solid food. Both the old birds never leave the brood at the same time, one always remaining to watch over their family.

It is a very engrossing amusement to observe the ways and habits of a Stork family, as by so doing one can with ease snatch glimpses of the internal economy of bird-life, which are at other times so difficult to obtain. One of the old birds remains by the young brood, longing for the return of the absent one, who is greeted with a joyous snapping of the beak, as he or she approaches laden with food for the nestlings: then the other bird takes its turn, and flies eagerly forth in search of provender. The care bestowed by the parent birds upon their progeny is very great. A nest which may happen to be a trifle too small is surrounded with a screen, so that the young shall not fall out. Every intruder is courageously attacked, and in most cases forced to retire. Many Storks will permit their host to look at both eggs and young, and even to take them out to examine them, returning them again to the nest; others, on the contrary, will not allow either to be touched, and if this be done will throw eggs or young out of the nest. Storks not unfrequently do this without any assignable cause; and the common folk look upon this as an offering on the part of the birds, due to the hospitality accorded to them!

At first the young birds cannot stand upright, but after a few weeks they learn to raise themselves. Shortly before they are able to fly they commence the art of snapping their beaks. At the end of about two months they can use their pinions, and continue practising them without intermission, until one fine morning they leave the nest with their parents. For some considerable time the family returns to the nest every evening, after which parents and brood soon forsake the neighbourhood, and enter upon their long migratory journey.

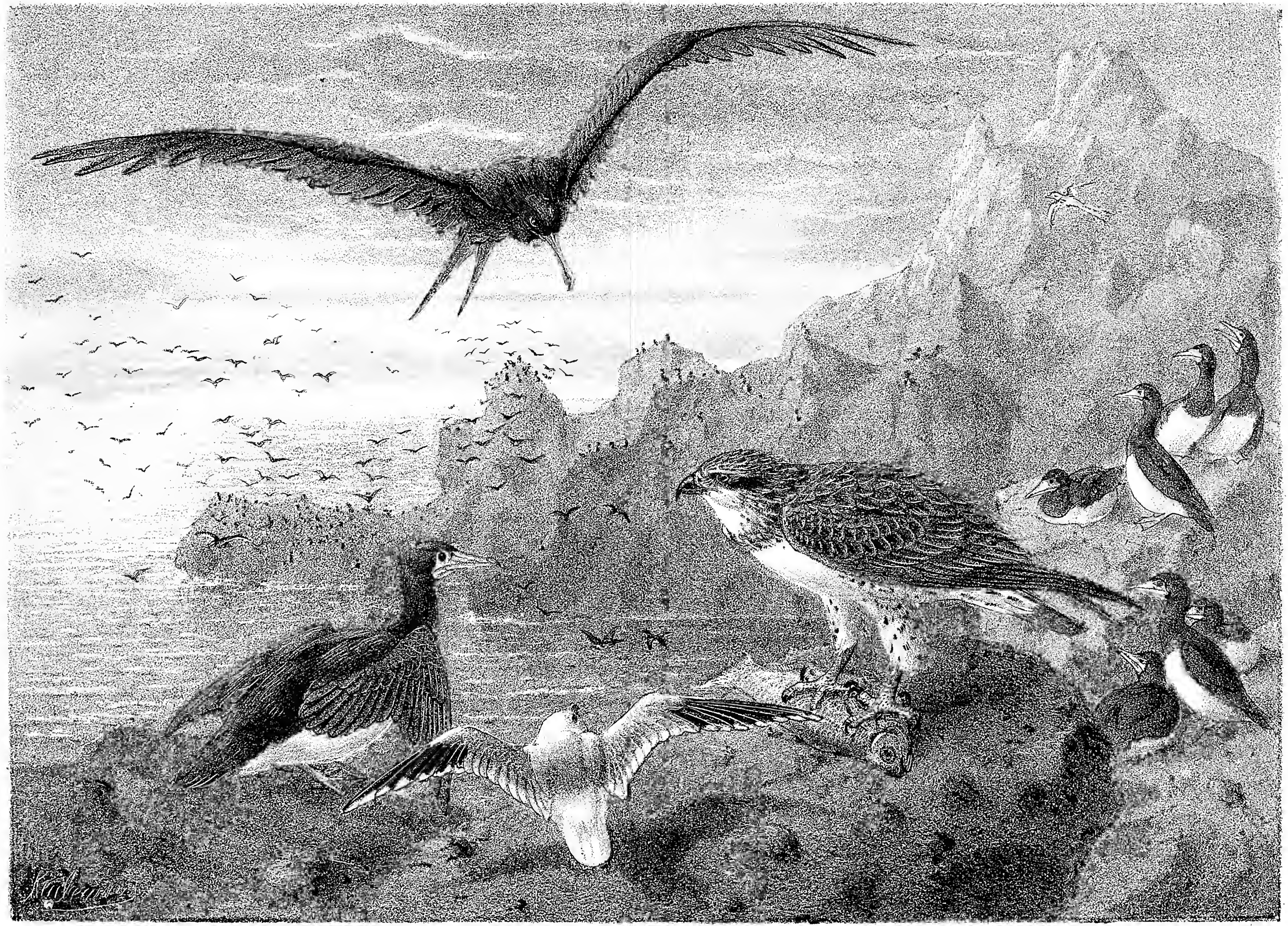
By the end of July the Storks make preparations for their "passage," still, however, remaining for some time in the neighbourhood of their birthplace, though already uniting with others of their species. The flock increases in number day by day; each day more Storks are seen upon the extensive plains as they come in from all sides, till at last they may be counted by thousands.

Now a careful mustering of travelling companions takes place: the weak and sickly, who are unfitted for the voyage, are weeded out, and, as is asserted by some people, even killed; tame birds, which are occasionally found amongst them, are, to say the least of it, very badly treated. Such proceedings form the celebrated "Council of Storks," which, though often exaggerated to a fabulous extent, is, to a certain degree, a well-founded fact.

After the muster is over the "council" breaks up amidst a grand snapping of beaks; the vast host of birds rises in spiral lines high up into the heavens, and soon vanishes from our sight. They pass rapidly onwards, only first alighting in some locality where food promises to be plentiful. On each occasion of a halt they perform their wondrously beautiful aërial descent. The rapidity with which they migrate I have often experienced. They appear in the interior of Africa almost at the same time at which they left Germany. By the middle of September, and before the end of that month, the "passage" is over, in 12° of north latitude. According to my own observations they go as far south as 10° north latitude. Naumann, it is true, asserted that some individuals passed the winter in the south of Spain; but he was mistaken, for they do not even stop in Egypt. It is said that a nobleman, of Lemburg, once caught a Stork, round whose neck he attached an iron collar, with the Latin words, "*Hæc ciconia ex Polonia,*" engraved on it. He let the bird go, and the next year the bird returned with the addition of a thin gold ring, on which was engraved the following inscription: "*India cum donis remittit ciconiam Polonis.*" That the Stork also winters in India is an undoubted fact: those, however, which breed in Galicia would hardly migrate there, but go rather to Africa, which latter continent they visit far into the interior; they pass Egypt and Nubia, touching only, on their "passage" further south, a flock never wintering in either of these countries. I once, at this season, met with two Storks in Nubia, but one was sick, and the other had stopped to keep it company. Similar cases have occurred in Germany, but they are only exceptional.

Old Storks are very difficult to catch, as they well know how to avoid a trap: they are useless, however, for keeping in confinement, because they always remain wild and untameable. A young bird is, on the contrary, easily taken with frogs, mice, small birds, worms, meat, and such kinds of bait: it soon learns to know its master, and becomes attached to him; will come when called by name, allows itself to be coaxed and petted, and will follow its owner like a dog, while it carefully avoids a stranger. If, during its master's absence, it meets with any annoyance, it will, on the return of the former, express its distress by snapping and curious posturing, or movements of the wings, or at any rate show its delight at the absentee's return. The bird's wings need not be pinioned, as it soon becomes used to flying in and out. In the winter it must be lodged in a warm stable or shed, and its drinking-water kept free from ice. When the time for migration arrives, the tame bird usually becomes very restless, and will also fly to the place of muster, as though intending to depart with its companions, but generally returns insulted, after having been well beaten and scouted, to its old home. Still cases have been known where the longing to depart proved irresistible, and the bird has left with the rest; but it has also been known that such birds have again reappeared, and given loud utterance to their old affection for their master. A tame Stork, on the estate of Count Zichy, in Upper Hungary, returned joyfully one fine morning from his journey to Africa, strode up the garden, in no way disturbed by the happy cries of the children who recognized their long-legged friend, and walked, quite gravely, into the room for his breakfast, just as he had formerly been used to do.

Popular story has embellished the history of the Stork with numerous legends. It is everywhere believed that this bird can exorcise fire, or that a fire will not break out in a house upon which it has its nest, and so forth. Other species of Storks enjoy similar fellowship and protection at the hands of man. I was once cursed and abused, aye, seriously threatened even, on an occasion when I sought to examine the nest and take the eggs of the Sacred Black Stork, in the Eastern Soudan; and I only succeeded in appeasing the anger of the crowd by asserting that I wanted to prepare a valuable medicine, in which it was imperatively necessary that one of the ingredients should be the egg-shells of a sacred bird, inasmuch that those of any other could not possibly possess the same virtues!



J.C.Keulemans.lith. M & N.Hanhart.imp.

THE SEA-SHORE.

PART IX.

SKETCHES FROM NATURE.

(Continued.)

CHAPTER I.

THE GREAT WHITE HERON
(*Egretta alba*).

> "The moping Heron, motionless and stiff,
> That on a stone, as silently and stilly,
> Stood, an apparent sentinel, as if
> To guard the water-lily."
>
> Thomas Hood.

Michelet, in speaking of the Heron, calls it "the type of melancholy, the dreamer of the swamp, a decayed gentleman of quality." I, for my part, have during my travels repeatedly met with and observed close upon twenty different species of Herons under various circumstances, and the result has ever failed to show me anything like melancholy or dreaminess in connection with any one member of the entire family; on the contrary, Herons, however much they may have annoyed me by their wariness, always pleased me by their graceful form and habits of life. I incline more to the opinion of Naumann, who, in speaking of the bird that we are about to describe, says that it is one, which by the extreme delicacy and purity of its plumage, as well as by its conspicuous size, far surpasses all other European members of the Heron family. The spectacle of numbers of these grand birds, as seen in the far distance, is one of unrivalled beauty, or when cleaving the air the sun shines on their pure white plumage and enhances its loveliness, or when standing out in bold relief against the dark water. I have often met with these birds on the borders of the Lake of Mensaleh, in Egypt, as well as amongst the swamps of the White—and Blue Nile; and each time I have seen them they have more and more rivetted my attention.

The Great White Heron is unfortunately a rare bird in Germany, and then only occurs as a passing visitor, for its home lies on the south or south-east of Europe. It is, if not a resident, a yearly and regular frequenter of those vast morasses through which the countless branches of the two principal rivers of our continent weave a net-work of silver streams, in which low swampy tracts the fruitfulness and plenty, richness and luxuriance of vegetation vie with those of countries within the tropics. The winter season compels it to migrate, though not far, for the swamps and lakes of lower Egypt offer as eligible a retreat as the bird can wish. Here I became acquainted with it.

The Great White Egret far surpasses in size all other of its European cousins, and is remarkable for its proud bearing. It is four feet in length, with a breadth of over six feet across the wings. The plumage is dazzling white; the feathers on the back are long, stiffish, and filamentous. This dress is as lovely as it is simple. These Egrets, alighting on green trees, appear in the distance like brilliant white blossoms belonging to the same. A close acquaintance of this bird does not often fall to the lot of the observer; for it is, under all circumstances, exceedingly shy and difficult of approach, taking good care to keep out of reach of man: in this its conduct differs widely from that of its more diminutive cousin, the Little Egret (*Egretta garzetta*), and still more so from that of the elegant little Squacco Heron (*Bubulcus ibis*), which latter are often found three and four together, perched on the backs of the buffaloes in Egypt, and in dozens on those of elephants in Central Africa, occupied in cleansing them from parasites, while at the same time serving as a beautiful decoration. The Great White Egret is, perhaps, the shyest of all our European Herons, and has good reason indeed to flee the presence of man.

Even without its brilliant white plumage, the Great White Egret would be easily recognizable at a distance, for its carriage is nobler and prouder than that of the Common and Purple Herons, which very nearly equal it in size. Its slender form also serves to distinguish it from the others, while its flight appears much lighter, more rapid and lively than that of all other members of the family. It is passably sociable, especially during the breeding season, though it associates more with its own species than with other members of the genus.

The food of this bird consists principally of fish, frogs, tadpoles, mice, small birds, and such like, possibly insects as well. It catches fish, as do all other Herons, by cautiously watching for them, and suddenly darting down, with its long neck and beak, upon the unwary prey, as soon as it comes within reach. When fishing it often creeps stealthily amongst the higher aquatic plants, because fish are most plentiful in such localities, though it always shows a preference for the more open spots in dense reed-beds; besides capturing fish and water-lizards, it occasionally seizes on small mammals and birds, all in the same manner, by darting its sharp beak like a javelin. During the day the bird is seen here and there, over the whole length and breadth of its extensive beat; towards evening it retires to certain fixed roosting-places, which consist of high trees standing undisturbed and surrounded by water: on these it retires to rest in company with other members of the family.

I have already given a description of its habits during the breeding season, but will now give some further particulars about the nest. This is placed either in the swamps on clumps of broken reeds, or on trees, and when situated on the latter is generally placed high up. The ground-work of the nest is formed of dry twigs of different sizes, upon which are laid dead reeds and flags; and, lastly, the hollow of the nest is lined with the leaves of reeds and sedge. By the beginning of May these nests contain from three to four pale gray-green eggs, about the size of those of the domestic duck. After three weeks incubation the young are hatched: these at first are excessively ugly, but they are, nevertheless, the objects of great affection to the parent birds, who provide them with more than a sufficiency of food. The young can be reared by hand without much trouble, and may be tamed to a certain extent; they would also most probably breed in confinement, for they agree peaceably with allied species, and will live for years.

Man is the chief enemy of the Great White Egret, pursuing it, as he does, for the sake of the exquisite feathers which grace the back of the bird. These feathers are manufactured into plumes, worn by the Hungarian magnates, and by their splendidly-dressed soldiery in their schakos. It would, indeed, be difficult to find any other feather so well adapted for such a decoration as the long waving plumes of this. Ostrich feathers look heavy and—however pure and clean they may be—dirty in comparison with those of the White Heron. The Hungarian is right, when he looks upon his plume of Egret's feathers as the most elegant part of his magnificent dress.

The successful pursuit of the Egret out of the breeding season is somewhat difficult, on account of the excessive wariness of the bird, which renders many of the hunter's stratagems abortive. In the breeding season, however, this amusement is much sought after by Sunday gunners, —a piece of cockneyism much to be regretted. The so-called sportsman stands under the trees and awaits the arrival of the parent birds with food for their young: *come they must*, poor things; and when they do it requires no feat of legerdemain to accomplish their destruction. Just like schoolboys, these individuals knock over the magnificent birds, not for any useful purpose, but simply that they may be able to boast that they have shot an Egret, and thereby accomplished an act worthy of record.

Years ago, when the art of Falconry was in vogue, it was different. In those days it was a grand and manly sport to go out with Falcon on wrist, see the exultant bird rise high in the blue heavens, and select for itself the noble quarry. Eager for prey, the princely bird would circle above the scarce less royal Heron, striking courageously at its adversary when opportunity offered. The rogue, however, was often well able to meet his pursuer, defending himself bravely with his sharp-pointed beak, and cleverly evading the attacks of his now embittered assailant. At last the Heron yields to the Falcon. Dashing down like a flash of lightning the Hawk strikes: a cloud of white feathers from the neck of the victim float in the air; a hoarse cry is rung from the terrified bird, mingling with the shrill scream of the victor; and both birds descend to mother earth,—the one uttering its last sad wail, and the other screaming with exultant triumph. Such was the noble sport of Falconry, in comparison with which that of the present day is but a wretched system of assassination.

CHAPTER II.

THE WOODCOCK

(*Scolopax rusticola*).

> "In youth's keen eye the livelong day was bright,
> The sun at morning and the stars at night,
> Alike, when first the bittern's hollow bill
> Was heard, or woodcocks roamed the moonlight hill."
>
> WORDSWORTH.

WHEN, on the third Sunday in Lent, the clergyman is strenuously engaged in expounding the Gospel for the day to his congregation, and is seeking to explain, to the best of his ability, how the devils were driven out, he is sure to be addressing one true believer at the very least, and that will be the "forester" of his district. 'Tis a bad sportsman that does not go to church on the third Sunday in Lent, though, sad to say, he will probably not be over-attentive to the parson's discourse; for on that Sunday he will most likely be thinking of the little wood demons which he proposes to seek and drive out of cover on the following morning, namely, the Woodcocks! This especial Sunday is called by our sportsmen by the cant name of "Woodcock Sunday," and the portion of the Gospel set apart for that day is also—somewhat irreverently, I allow—termed the "Woodcock Gospel."

In fact, taking one year with another, the third Sunday in Lent is about the day on which the Woodcocks arrive. They are the favourite small game of the gunner, the marksman's pride, and the housekeeper's joy. Taking for granted that every one is more or less acquainted with this singular creature, there remains no necessity on my part to describe it; I will, therefore, only state that it is about the same size as the Partridge, the general plumage being of the colour of bark or tan, the upper part of the head unusually high and prominent, the beak long, the eyes large and set far back in the head.

The Woodcock inhabits nearly the whole of the northern part of the Old World, and is known from Japan to Spain, from Norway to Greece, and from Siberia to India. In the North it is a summer guest and a migrant; in the South—for instance, in Italy—it is a bird of passage all the year round. In North Germany it appears with the lily of the valley and when the figwort begins to sprout, shifting its quarters hither and thither until the Swallows return amongst us, at which time it remains stationary till the end of September, when it commences its journey southwards by easy stages. The Woodcock travels by night, but the weather must not be too boisterous; in which case, or if the nights are very dark, it remains quiet until the weather improves. Heavy gales, storms, and other impediments also serve to delay the migration. It is rare that the Woodcock remains long in one place when on the "passage;" the bird seeks, as much as possible, to continue the journey as fast as circumstances will permit. It is always met with earlier in large woods than in the smaller copses, which latter are only visited during the principal "flight." At times the Woodcock is found in large numbers in places which it generally avoids, and often the contrary occurs. It is a capricious and fastidious bird.

The Woodcock selects, as its summer residence, woods of all kinds which are well furnished with undergrowth. No other bird, perhaps, is so addicted to trees as this one, and on that account it is rarely met with in treeless districts. Damp, low-lying woods, intermingled with alder-beds and swampy ground, form its favourite haunts. Exceptionally favourable localities possessing the aforesaid requirements always hold Woodcocks, even when unpreserved. The bird lies hidden during the day-time, sleeping, or at any rate inactive, in the darkest and most retired part of the wood or in shady thickets, without troubling itself about the doings of man or beast; it is only at nightfall that it begins to move. The Woodcock walks slowly and in a crouching attitude, creeping rather than running, and when so engaged it looks a most easy-going bird—almost simple, I may say, in its aspect. Its flight is not very rapid, though the bird is excessively active and adroit, for it shows the most masterly dexterity in threading its way amongst the trees and branches without striking against them. When scared or suddenly flushed it makes a peculiar rustling with its wings, a sound which is instantly recognised by the sportsman, announcing the presence of the bird, even though he may not see it. The Woodcock flies unwillingly to any great distance, and always seeks to hide itself, for it is more timorous and distrustful, perhaps, than any other creature. If in any way possible, it will, when in danger, squat on the ground without seeking any other cover, trusting for safety to the close resemblance of its plumage to the surrounding grass or dead leaves. The most experienced sportsmen assure us that one would be incapable of seeing a Woodcock squatting on the ground in a wood, though standing close to it, were its presence not betrayed by its large brilliant black eyes. The bird will often lie close until the gunner is within a foot of it, when it will rise from under his feet and fly off, uttering a loud "katsch" or "dac," or in some cases quite silently.

Contrary to the nature of other members of the family, the Woodcock dislikes associating with those of its own species, and it is only during pairing time that one may see several males assembled about a female bird. The courtship is carried on after dusk, when the male bird bird becomes quite another being. He arrives, giving utterance to a number of singular notes, resembling a shrill whistle or even a low murmur, which sounds somewhat like "psziep" or "yurrk": on these occasions the flight is lazy and slow, the beat of the wings being languid, like that of an Owl, and the plumage much ruffled and puffed out; in this manner he roams from one place to another in search of his mistress or a rival. In the latter case a hot engagement immediately commences, the adversaries tumbling about in the air and making savage lunges at each other with their long bills, which elastic weapons, however, cause no serious damage to the combatants. In the heat of battle the two, and sometimes three, birds engaged form one whirling ball, which is precipitated to the earth, and many a gunner has made good use of the opportunity to secure a pot shot highly conducive to the filling of the game-bag. These tilting matches during paring time last as long as an unmated male bird remains in the neighbourhood of a breeding-place; they only take place, however, in fine weather. These fights precede the actual pairing off of the couples, and may be compared to the "playing" of Black-game, "drumming" of snipe, or the rival singing of small birds.

When the ceremony of pairing is over, the female retires to some quiet secluded spot as far as possible from the haunts of men, and seeks amongst grasses, behind a small bush or trunk of a tree, a natural hollow, or in default of this makes one herself, which she scantily lines with such soft materials as the immediate neighbourhood affords. By the month of May, if the breeding bird be flushed, this inartistic nest is always found to contain four smooth eggs, not shiny, of a pale rusty yellow colour, marked with yellow-brown blotches and specks. The female alone incubates, and sits very close; the eggs are hatched in from sixteen to seventeen days. It is only when repeatedly disturbed that she will forsake her nest, and she will return again even after an egg has been abstracted. The male, on the contrary, seems to care very little for the eggs, though his affection for the young birds is very great; the latter are the prettiest little creatures imaginable, and their brown and white-spotted downy dress becomes them well. They leave the nest almost as soon as they are hatched, sometimes with pieces of the egg-shell still sticking to them, and are, as may be imagined, exposed to many dangers during their chickenhood. The colour of their plumage, which closely resembles that of the ground, is their principal protection. When one sees both the old birds rise, and hears them utter an anxious "dac, dac," and then suddenly alight, it is a sure sign that they have their young with them; these are, however, but rarely found, no matter how carefully they may be sought for, because when they squat they seem immediately transformed into patches of moss or lichen. Eight days after their entrance into the world the feathers begin to peep through the down, and a fortnight later the young are almost fully fledged, and already capable of fluttering away with tolerable facility.

Sometimes the observer may have the good fortune to catch a family of Woodcocks at feed. As twilight draws to a close old and young leave the thick underwood for the open. Both the parent birds turn over bunches of leaves, pieces of moss, bark, &c., with their beaks; or bore hole after hole in the soft soil, or even cow-dung, to obtain the small beetles and worms which form their exclusive food. The soft sensitive bill serves to enable them to find these tiny creatures. The young pick up what is laid before them by their parents, but soon themselves learn the use of their highly-developed beak, which comprises feeler and lazy-tongs in one.

Woodcock shooting is the gunner's greatest delight; do not, however, ask me for information on that subject, but apply to old experienced sportsmen. Besides man, this bird is sought after by many other gourmands, our friend Reynard, for instance; martens, cats, hawks, Ravens, and such predatory vermin, also have a strong liking for so toothsome a morsel.

Woodcocks may, when caught young, be kept in captivity, being fed on earth-worms, mixed with milk and wheaten bread; they become tame and confiding, learn to know their keeper and come to his call; but they are stupid companions, only affording amusement by their curious postures, and the pleasure gained by the observer being able to watch the actions of a bird so retiring and solitary in its habits.

CHAPTER III.

THE RUFF[*]
(*Philomachus pugnax*).

"Wer sind die verzauberten Ritter am Strand
In solchem verschiednen Gewand?—
Um die schöne, begeisternde Liebe
Vertheilen sie Stoss und Hiebe.
Wann deckt ein Ritter den Sand?
Da nahen sie wieder, die Kämpfer so werth,
Der Schnabel ihr Sper und ihr Schwert,
Ihr Harnisch der wallende Kragen!
So kommen die Tapfern und schlagen,
Von lieblichen Frauen begehrt.
Schildbuckel und Wehr auf dem Antlitz nur,
So rennen auf rühmlicher Spur
Die Helden mit off'nem Visiere
Zum Zweikampf oder Turniere,
Wenn Frühling schmückt die Natur.
Das sind die verzauberten Ritter am Strand!
Alljährlich dem nämlichen Stand
Und den Kampfort wählend, zerzausen
Die Recken sich alle die Krausen.
Doch Keiner erliegt auf dem Sand!"

WELCKER.

I HAVE always observed that, in inspecting public collections, the visitor, when he comes to the shore birds, generally selects the hero of the above stanzas, before whom he remains for some time in rapt attention. And, in fact, this bird is well worthy of the notice of the casual observer as well as that of the naturalist; so singular is its plumage and so curious are its habits and ways that it cannot be compared to any other member of the family.

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[*] The male is called the Ruff, and the female the Reeve.—*W. J.*

It is difficult to give any definite description of the plumage of the male, for during the summer it is of no fixed colouring, inasmuch as that of the large ruff round the neck varies immensely. It is sometimes of a rusty red and spotted, sometimes rusty red and barred, at others the same colour and striped longitudinally; sometimes it is ash-grey, and tipped, banded and striped; sometimes white, thickly spotted with black; sometimes all of one colour, say yellowish brown, blue-black, yellow-greyish white, black-green, metallic steel-colour, &c. In museums there are generally large series of these birds, of which no two resemble one another, and it is especially improbable that one would find two perfectly alike. Besides this peculiarity, there is another, namely, the singular difference of size between the two sexes, which, with the long legs and slight web between the outer and middle toe, stamps our friend with the mark of especial singularity.

The Ruff, or male, only possesses the before-mentioned variety of plumage during pairing time, whereas in the winter he adopts a dress quite of a different character. When young the plumage of the two sexes is identical, and they are only distinguishable one from the other by their size. The ruff is only assumed by the adult male, and grows on the nape and front of the neck; it consists of a number of stiff feathers, which lie very thick and close to one another; these fringe the neck all round, except at the back. This ruff is so large as to form a regular shield to the front of the head, and can never be laid so close to the body as not to be immediately apparent, in whatever position the bird may be: it comes with the spring moult, during which time another remarkable decoration peculiar to the male makes its appearance, in the shape of numerous fleshy tubercles on the face; these gradually encroach upon the feathers till, in old birds, they cover almost the whole of the head. On the beak are found warts, which grow to the size of a pea, and are supposed to be the result of wounds, received by the hero in his numerous duels. After the breeding season has terminated the ruff is moulted, and the tubercles become hidden again from view by the growth of the feathers. The Ruff now puts on his travelling dress, which is much more simple in character.

In Central and South Germany he is most often met with in winter plumage, though he is occasionally seen in his summer dress. His principal habitat, however, is the North, where extensive marshes and swampy pastures, much frequented by cattle, are to be found. This bird is often found by the sea-coast, and prefers the marshes in its neighbourhood to all others, yet it is by no means a sea-bird. "It is never," says Naumann, "seen on the flats, whether of mud or sand. When at the commencement of the ebb all other birds are seized with that jubilant restlessness which drives them hither and thither in clouds to alight on the 'flats,' scarcely waiting until the receding tide has left them room enough to swarm on and run about the slimy shore, then the Ruffs and Reeves that may happen to be in the neighbourhood join in the general jubilee, intermingling freely with other waders, though they never by any chance alight either on the mud 'flats' or on the sea-shore. I have often watched this joyous assembling with intense pleasure on the shores of the North Sea, but was struck at the very first occasion by this trait in the habits of the Ruff and Reeve, which, after keeping company with the happy motley throng for some little time, always retired some distance from the sea to their accustomed haunts." In these places our bird may be seen ever on the move, marching about in the proudest manner imaginable; the Ruff showing in every movement the great impression he has of his own importance, whilst the Reeve is far more modest in her demeanour. Both are active day and night, only sleeping at short intervals, and that generally on one leg. The Ruff is remarkable partly from his very upright carriage, singular deportment, and, lastly, by the frill of feathers round his neck, which, by the way, sometimes causes him no little trouble when flying, or in a heavy wind, and yet it seems to be his greatest source of pride and self-satisfaction. During a gale the Ruffs are obliged to keep quiet, as the wind would upset them if it caught them from behind; whereas, in calm weather, the frill is alternately expanded and contracted, and is, in short, always in motion. The Reeves and the young birds are sociable, wandering about in large flocks, which one meets with, as I have done in Africa, even in the middle of winter. The Ruffs travel by themselves, only mixing with the Reeves during pairing time: the former agree well together, as long as they are not troubled with the "tender passion;" but as soon as the breeding season arrives they become the bitterest enemies, fighting with one another for dear life,—so at least it would seem. In all localities where these birds breed there are certain regular fighting grounds: these are places slightly raised, covered with close turf, and measuring from four to five feet in diameter; they are recognizable by the grass being trodden down and mud-stained, as also by the feathers and dung which lie scattered about. One male waits for the other, and as soon as an adversary is forthcoming a duel takes place, in which the combatants fight until they are exhausted, rest awhile, and then commence *de novo;* after they have apparently separated for good, they will return again to the charge. Several pairs may be seen fighting at the same time, but each set of adversaries keep to themselves. Amidst a variety of movements they strike at one another with their beaks, seeking, with ruffled plumage and outspread frills, to ward off the blows on either side; when engaged they appear so excited as to tremble with rage. It is fortunate that their beaks are blunt at the end, so that it is impossible for them to damage one another seriously, the loss of a few feathers being all the harm done; a fatal termination to one of these duels never occurs. The reason why they fight at all remains a mystery, as yet unexplained. It is supposed that these fights take place on account of the females; but these latter are rarely, if ever, present on such occasions, and the defeated bird even seeks his lady-love after the battle is over. In fact, on the field, neither bird is really conquered, and outside of the tilt-yard, so to speak, no Ruff is assaulted or disturbed when in company with his mistress; in short, they seem to fight from sheer love of the thing. Usually the frequenters of the ring are only males, though a female may occasionally be seen there. In the latter case it generally happens that one of the males stops fighting for the time being, and flies off with his mate; he soon returns, however, to finish the round.

Ruffs are very shy of human observation when engaged in these tournaments, and cannot bear to be watched by man. If one wishes to become a spectator it must be done at a distance with the aid of a glass, for the birds will not allow anyone to approach nearer than from a hundred to a hundred and fifty yards of their tilting-ground. Their love of fighting is in no way extinguished by confinement. They become sooner accustomed to captivity, whether in a cage or a room, than any other bird. "Just caught," says Naumann; "carried for miles in a net or a handkerchief, place the bird in a room, and in the first hour it will begin to make itself at home; and if there chance to be another Ruff there, the two will immediately commence fighting before they touch their food." They seem at once to be agreed upon a fixed boundary line, and the act of overstepping it is looked upon as a challenge, which is instantly accepted. In those cases which have come under my own personal observation, I have remarked that these birds fight for any reason, or no reason,—for the roosting place, for food, for a fly, &c.,—without apparently any cause or definite object. That this lust for strife is in some way connected with the passion with which the bird's breast is animated during the breeding season, there can be no doubt, for at any other time of the year the bitterest enemies become the best of friends.

Naumann kept Ruffs and Reeves in a room for over two years: they soon became tame, and fed the first day of their captivity. During the whole of the migratory season they always kept awake and lively the whole night long. It was most interesting to watch them closely while moulting, at which season the changes in plumage are great. The result of these observations established the fact that each bird assumed, regularly, exactly the same plumage which it had borne the previous year. The most amusing scenes occurred when the females placed themselves between the Ruffs, while the latter were fighting, with a view of terminating the combat. They were fed on a compound made of milk-roll, barley-meal, curds, and different seeds; the last they will eat in their natural state, though their principal food consists of beetles, worms, and all kinds of small insects.

The Ruff is a polygamist,—one never meets with a Ruff and Reeve that have paired off; and to the Reeve is left the entire business of the nursery. The first to appear in the breeding places are immature birds of the first year, generally of both sexes; in May the old knights errant put in an appearance; and, lastly, the Reeves arrive in large flocks. The whole company now separate, and the Ruffs commence their celebrated duels. It is estimated that of a number of Ruffs and Reeves frequenting a given locality, the Ruffs, that is to say mature fighting males, form a fourth of the entire mass; nevertheless, two males may often be seen peacefully consorting with one female, though a few minutes later they will break a lance in the tilt-yard. Certain Ruffs show a decided preference for certain Reeves, and are much in their company; but it cannot be said that they are ever bound by any permanent conjugal tie. The nests are often at some distance from the fighting ground, and are single, generally situated not far from water, on a small hillock: they consist of a hollow scraped in the ground, sparsely lined with a few bents and blades of grass. The eggs are from three to four in number, rather large, of an olive-coloured ground, spotted (often very irregularly) with rusty brown, bluish green, and olive-black spots. The female hatches her eggs in from seventeen to nineteen days, and is very much attached to them. On the approach of an enemy she immediately feigns being wounded, and thus seeks to draw off attention from the nest. As soon as the young are hatched she leads them from the nest to some moist spot, where she teaches them to seek for food, first laying it before them, and later on leaving them to hunt for themselves. When a month old they are full grown, and in condition to migrate with the mother. The Ruffs do not trouble themselves in the slightest degree about their offspring. They fight as long as a female, without nest or eggs, is to be found; and when there are no more Reeves minus a family they take their departure from the breeding place.

These birds possess numerous enemies beside man, who traps them for the sake of their flesh, which is considered a great delicacy: they are persecuted by Falcons, Goshawks, Harriers, Ravens, Crows, foxes, stoats, and even lemmings. They can only manage to escape the clutches of their winged foes by taking to the water and diving. Their four-legged enemies usually confine their depredations to the nestlings. Man snares them in horse-hair nooses.

CHAPTER IV.

THE BLACKWINGED STILT
(*Himantopus rufipes*).

> "Bald am Fluss und Meere schwebend,
> Bald die rothen Steltzen hebend,
> Gibt er Augenweide
> In dem weiss und schwarzen Kleide.
> Doch wir sehn an tiefen Stellen
> Oft auch reiten auf den Wellen
> Diesen Flutgesellen,
> Raschen Flieger, Strandbeschreiter,
> Steltzenläufer, Wasserreiter."
> WELCKER.

ONLY a naturalist can understand the intense pleasure which I experienced when, on one of my first shooting expeditions in Egypt, I saw a dozen of these creatures, the longest-legged of all birds, quietly and undisturbedly wading in a village pond. This bird always used to strike my attention as a boy, when I saw it in my father's collection; and lo, now, there it was before me, alive, striding about as if on stilts. My newly-found friend awakened just as much interest in my breast as did the Pyramids,—those antique wonders of the world.

The Blackwinged Stilt is a shore bird, mounted on the longest of stilts, as its name implies. This is sufficient description. For that it is black on the back and occiput, with a tinge of metallic-green, and is otherwise white;

has a black beak and rose-red legs; is a foot long, and measures somewhat over two feet across the wings;—are matters of minor importance. The real wonder about it is the stilt-like dimensions of its legs.

The home of the Stilt is the south of Europe and Northern Africa. It is common in Lower Egypt, and is found in flocks near small ponds, about the 'long-shore lakes; also in companies in the swamps and lakes of the interior. In the Delta it is met with in every village where there is a buffalo-bath: in such localities as the last it is very tame and confiding, allowing the observer to approach within ten or fifteen paces; indeed, it is not very shy along the shores of the sea-lakes, if it has not been subject to much molestation. On the Blue Nile it is just the contrary; there it seems to have acquired an intense fear of man, and will not permit anyone to approach within from four to six gunshot's length. It is a very 'cute, shy bird, much the same indeed as its other relatives, especially the Greenshank,—the shyest of them all.

The movements and gait of the Stilt are somewhat slower and quieter than those of the *Totaninæ*, though in no way clumsy. It walks with measured steps, yet lightly and gracefully. It is seldom or never seen disporting itself on dry land, but is generally observed standing in the water, the latter often reaching up as high as its body. This bird does not feed under water on the bottom, like the Avocet, but gathers its sustenance from the surface and on soft mud-banks, &c. When wounded, or otherwise having been driven into deep water, it is capable of swimming easily, rapidly, and with activity, for long distances. When flying it is easily distinguishable, at any distance, from the Sandpipers or any of the

Totaninæ, by its extraordinary long legs, which are carried stretched out behind. When flying easily it will often glide along for some moments, and even at other times it does not move its wings very rapidly. The Stilt only flies high when pursued, and usually at about gunshot distance over the earth or water, as the case may be. Sometimes it squats flat on the ground, with its legs bent under it, and is but rarely seen standing on one leg. It remains awake and active up to a late hour of the night, and is as active in the bright moonlight as during the daytime.

Like other members of the family the Stilt is a sociable bird, and to see a solitary individual is an event of rare occurrence. It is only in its native land that this bird is seen in pairs, and then only during the breeding season; the entire family usually keep in close company. In the neighbourhood of lakes they flock together with Avocets, Godwits, Sandpipers, &c. On the Blue Nile I once saw four of these birds associating on the best of terms with a Redshank (*Totanus calidris*), and a Duck which was unknown to me. If one member of the family rose, the others followed; and the Stilts especially kept very close to the Duck, which appeared to be the leader of the united company. I made them rise some ten or a dozen times, and on each occasion I always remarked the same disposition to keep together. The Stilt is a peaceable and quiet bird, never showing any disposition to quarrel with other members of its species. During the breeding season, even, the different pairs live together in the greatest harmony.

Its food consists of all kinds of small aquatic worms: it picks insects and worms with skill from off the surface of the water, and will also take them in very shallow water, though it never appears to stand on its head, as does the Avocet, nor fishes at the bottom like some species of Ducks.

The Blackwinged Stilt breeds in Egypt in the beginning of May, and in Southern Europe in the beginning of June. The nest has been described to me as consisting of a hollow surrounded with a net-work of grass, and placed in the midst of the thickest reed-grass, and was, as I have been told, very difficult to find. The eggs which I received were of a greenish gray, speckled with a dark and a reddish shade, resembling in that respect those of other members of the family.

This bird can manage to exist in Egypt all the year round, and is therefore not obliged to migrate. The family probably remain the whole winter in the locality where the young were reared. The natives do not molest it: no Egyptian sportsman ever kills a bird which alights in his village, while he does not treat those which frequent the larger lakes and marshes with the same kind consideration; it is, probably, from this cause, that the Stilts which one meets with on the shores of the lakes are, without doubt, wilder than those in the villages, though even in the latter case they soon become very shy if persecuted. They rise when at a great distance from the gunner, uttering a loud "kiäk, kiäk," though they will alight with the greatest confidence near unarmed people, especially women,—a proof of their powers of discrimination. The flesh of the Stilt is far inferior to that of all other members of the family, and is hard and tough; this renders it unpopular with the gunner.

The Blackwinged Stilt probably occurs in Germany more often than one would suppose. The latest observations prove that the bird nests with us, here and there, occasionally. If people would only leave all rare birds in peace, they would remain with us much more often than they do: unfortunately, however, even naturalists persist in prosecuting a sport utterly unworthy of them.

CHAPTER V.

THE MOORHEN
(*Stagnicola chloropus*).

> "The coot was swimming in the reedy pond,
> Beside the waterhen, so soon affrighted;
> And in the weedy moat the heron, fond
> Of solitude, alighted."
>
> THOMAS HOOD.

WHAT man who has spent his boyish days amid country scenes has not followed the bird I am about to describe through the bullrushes, intent upon finding its floating nest with the red-spotted eggs; or has, at the very least, amused himself by watching its habits: in short, he knows the bird. Many, however, do not, so I will try and pourtray the Moorhen for the benefit of those who have not possessed the same advantages.

Our Moorhen, Waterhen, Marshhen or Stankhen as it is differently called, is a charming creature, about the size of a Pigeon. Its feet and legs are long, and it has a frontal plate of naked, red skin on the forehead; its plumage is slate-coloured on the breast and belly, with white feathers on the sides.* It inhabits all the reedy ponds, lakes, and marshes, of our fatherland; and, indeed, we may say, of almost the whole world. With us it is a bird of passage, migrating regularly, and apparently very fond of a wandering life, for it travels far. The call of the Moorhen may always be heard during the night in March and April, when it is on the passage: all of a sudden one fine morning the identical pair, so well recognized by the close observer as that of last year, is to be seen swimming happily about in the village pond, in company with the tame Ducks and Geese. Often one bird appears first, the other arriving later, or a young couple meet and pair for life.

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* Our author's description of the plumage of the Moorhen is barely sufficient, we think, for the uninitiated, so we append a more definite one, taken from Macgillivray:—"Plumage of the head, neck, and lower parts, dark gray; of the back and wings, deep olive-brown; edge of the wing and lower tail-coverts, white; oblong frontal plate and bill to beyond the nostrils, crimson-red; the tips, greenish yellow; feet, dull green, with a ring of bright red on the tibiæ. Young similar, but with the frontal plate small, and the feathers of the lower parts edged with white." —*W. J.*

From this time till September and October these innocent creatures live in their home, breed, rear their young, and vanish unnoticed as they came. It is rare that a Moorhen ever spends the winter in the north.*

This little being is so pretty and charming that every one who vouchsafes to notice it in the slightest degree must feel kindly disposed towards it. It is confiding, gay, graceful, neat, gentle, and joyous; carries its pretty plumage smooth and close to the body, its short tail raised, and its whole appearance is such as to please by its finished roundness; its carriage is taking, pleasing, light, active; it stalks about with a certain air of self-sufficiency, runs with ease and rapidity over the thin coat of aquatic plants which cover the pond, as though it was *terra firma;* it climbs cleverly to the top of reed or bull-rush; it swims with grace, rapidly and continuously bobbing its head with each stroke: in short, its every movement affords pleasure to the eye. Besides the above-mentioned accomplishments it is a first-rate diver, using its wings as oars when swimming under water: this art is only resorted to, however, when the bird is menaced by great danger, and not for the purpose of seeking its food at the bottom. Its flight is bad, heavy, weak and laboured; thus it rarely makes use of this mode of locomotion. When in danger it hides itself amongst the reeds and rushes: I may well make use of the term hide, for the sharpest eye can but rarely make the bird out when it desires to keep out of sight. If there is sufficient water it dives, only raising its beak above water from time to time to breathe, but nothing more; if it reaches the shore it creeps in amongst the reed-stems. It forces its thin, supple body through any opening, will crawl through the densest sedge, and wander over the most treacherous surface without sinking in, owing to the great length of its toes, which always afford it sufficient support. In undisturbed, out-of-the-way ponds its habits are timorous, and it decamps immediately on the approach of man, half running half flying close over the surface of the water, till it gains the reeds in safety. In most localities, however, it, on the contrary, takes up its abode in the neighbourhood of man, when, if not molested, it becomes as tame as the domestic Fowls, Ducks, &c., about the courtyard. It may often be seen on a small pond in the middle of a village or a garden pursuing its avocations, and not troubling itself in the slightest degree about man, though even then it does not court too open observation.

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* In the eastern counties of England the Moorhen, probably owing to our winters being milder, is found all the year round, though it is not so numerous in the winter.—*W. J.*

The Moorhen shows itself to best advantage when breeding, though perhaps one trait of its character can scarcely be exactly looked upon as praiseworthy, namely, its intense love of tyranny: no Moorhen will bear with the presence of another one of its species. Every intruder in the well-won beat is immediately assailed by the male bird, and eventually driven away. The males, indeed, only seem to care to meet for the pleasure of fighting a duel; and are they not plucky? They rush savagely at one another, half running, half swimming over the water, with outspread plumage and lowered heads, pecking and scratching each other with beak and claws, and striking even with the wings; the female supports her battling partner to the best of her ability. Jealousy, in matters connected with the tender passion, may probably be the principal cause of such bitter warfare; yet the bullying character of the Moorhen does not confine itself to others of its own species, but is extended to other water-fowl, such as Ducks and Geese, for instance, which our brave little friend will attack, and sometimes succeed in driving off the field.

Old birds always breed earlier than younger ones only just paired, and which have to seek a home for themselves. Usually, in the case of the older pairs, the male puts in an appearance somewhat earlier than his mate, for whom he, during his grass-widowerhood, calls incessantly, until she at length arrives. The readiness with which she accepts each amatory demonstration on the part of her now happy partner,—such as immediate preparations for nesting, &c.,—affords proof presumptive that the pair have been matched together for years past. If the pond contains any quantity of dead reeds the reunited pair immediately commence the labour of building. The nest itself is usually placed near the inner edge of the sedge nearest the water, either on some tussock of sedge that has been trodden down, or on some other suitable 'vantage spot; often, however, on the water itself, so as to be actually afloat: in the latter case, the nest is so thick and high that the hollow lays quite dry. Some pairs build a careless, slovenly structure, while others weave the material artistically together, somewhat after the fashion of a rush-basket. The female generally lays from nine to ten eggs: these are much larger than those of a Pigeon, of a beautiful oval shape, smooth and fine-grained in texture; their colour is a pale, reddish yellow ground, spotted and blotched with ash-gray and cinnamon- or dark brown. They are hatched about the twentieth day, the male relieving his mate several times during the labour of incubation: the tiny young are coal-black in colour, with naked faces and red beaks; by the second day they are able to swim, and, under the guidance of the parent birds, soon learn to find their own food.

Both the old ones show the greatest affection towards their offspring, and will not forsake them, though they be continually disturbed. My father once received a nest containing eggs, in which the young ones already began to chirp: he, for pity's sake, had it replaced, when the mother recommenced sitting, although they had been taken away from her for three hours, and succeeded in rearing the brood.* Naumann was once having a pond filled in, in which a pair of Moorhens were breeding: the water about the nest grew less and less, still the mother would not forsake her eggs. At last the small remaining pool itself had to be filled up, and one of the labourers in shooting a barrow-load of earth managed so clumsily as to upset a portion of the mould upon the bird and nest, still she would not abandon her charge; so Naumann stopped the work until the young Moorhens were hatched, and the faithful parents had led them in safety to a neighbouring pond.

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* I may here mention an anecdote told me on the 13th of May, 1874, by the person who witnessed it, and who is, I may add, a reliable informant. He took a Greenfinch's nest, containing two eggs, from out of the top of a high holly-hedge, and, by way of experiment, placed it in another fork of the same hedge, some six or eight feet from the spot, very low down, and quite exposed to view. The Greenfinch, strange to relate, did not desert her nest, but laid three more eggs, and commenced sitting: unfortunately, after a few days, the eggs were sucked by some vermin, thus preventing the hoped-for pleasure of seeing the brood safely hatched. I saw the nest myself in the hedge where it had been placed, as also the site where it was originally built.—*W. J.*

A pair of Moorhens, with their brood, form a most charming picture. The old birds vie with each other in the tenderness and care which they show towards their offspring. Swimming in the wake now of the father, now the mother, the chicks beg in low chirping tones for food, which the parents are continuously collecting and placing before them. The watchful glances of the happy old birds are ever turned towards their young, as the latter skim and dance on the water like children at play. A low, "dook, dook," will serve to collect them together if dispersed, whilst the loud call, "kerrteter," gives warning of some treacherous cat sneaking along the bank, or bird of prey as it glides overhead; the ordinary "terterter" brings them out from their hiding-place. After a few days the young are able to provide for themselves, though they are still most carefully tended by their parents, under whose wings they are brooded, and warmed at night, like young chickens.

At last the overpowering love of their young, which has hitherto filled the breasts of the old birds, becomes changed; their conduct towards their now grown-up brood is quite altered, they drive their young away, so as to commence building their nest afresh. The female again lays six or seven eggs, either in the old or a new nest, and sits upon them with the same ardour and perseverance as she did on the first clutch, the male bird often remaining for some time longer with the first brood. In due course the second lot also behold the light of the world, and are reared like their elder brothers and sisters: these, however, take part in their education. "As soon as the second brood has made its appearance," says Naumann, "the members of the first one, now more than half grown, come up, showing the greatest possible kindness and friendship towards their younger relations, and assist the parents in guiding them about: old and young, great and small,—there seems to be but one heart, one soul amongst them all. The larger young ones divide with the parents the labour of educating their juniors, showing the little mites every possible care and attention, find food, bring it to them, just as the old birds had formerly done for them, and still do for the new arrivals." Each grown-up bird is zealous in its efforts to provide food for the youngsters, while the latter follow alternately in the train of now their foster, now their real, parents, receiving food from both parties. Besides the two old ones, each young bird is not unfrequently accompanied by two assistant feeders, and both do their utmost to keep the chick well supplied with food, and lavish caresses upon them. In danger, also, the elder young birds act just as if they were the real parents, warning the younger ones, or forcing them to fly the impending danger.

The Moorhen in confinement, after some few struggles, soon becomes resigned to its fate, and learns to conduct itself in a rational manner. It easily accustoms itself to man's presence, and can be so tamed as to follow its keeper like a dog. We possessed a male bird for a long time which used to run about the garden, and feed with the fowls; and my father knew one which came of its own accord into the yard at the rectory, in the village of Langendembach, where it ran about with the other fowls, and returned to its pond again; after a time, indeed, it learned to know the call which summoned the chickens to be fed, whose example it immediately followed.

I have before stated that the Moorhen probably does most of its travelling on foot, following the courses of the rivers, a fact which makes it all the more wonderful how far they manage to prosecute their journey. I have shot Moorhens at water-holes in the forests of Central Africa; others have met with it in Senegal, Newfoundland, on the Society Islands, &c. How they ever reached these places is incomprehensible.

It is a sad pity that the Moorhens, which frequent the neighbourhood of our ponds and lakes, should be persecuted as they are, and preposterous and ridiculous that people should go so far as to regard them as destructive to fish. The food of the Moorhen consists exclusively of seeds and the tender green shoots of water-plants, insects, and aquatic worms; never of fish. This bird cannot be otherwise than useful to us. It is not worth anything for the table, as its flesh is tasteless; thus there is no just reason why it should be destroyed.

CHAPTER VI.

THE FLAMINGO
(*Phœnicopterus roseus*).

> "Evening comes on: arising from the stream,
> Homeward the tall Flamingo wings his flight;
> And where he sails athwart the setting beam,
> His scarlet plumage glows with deeper light."
>
> SOUTHEY.

INDELIBLY, indeed, is the impression stamped on my memory of the glorious spectacle I enjoyed—aye, revelled in—when I first stood on the shores of the Lake of Mensaleh, in Egypt! It was winter, and all the winter guests which I remembered to have seen in other countries were now before me, and if not embraced at a single glance, still little by little they struck the eye of the astonished spectator. Hundreds of forms were before me, and I could make note of the habits and ways of thousands. The enquiring glance was sure to fall on something full of interest. The Flamingo, the most curious of all the feathered tribe here assembled, soon engrossed my entire attention: like a gaily-clad army corps, a wondrous, flame-coloured line spread itself out before the spectator, glorious in its brilliancy; the sunlight played on the dazzling white and rosy red plumage of these birds, blending it into one gleam of living light. Thousands upon thousands of Flamingos were to be seen fishing together in the deeper water, whilst the distance made them appear as though drawn up in faultless line, and almost motionless. This red army of wondrous creatures covered an extensive portion of the lake, which space was continually moving.

It is rare that man ever has the opportunity of watching the peculiar habits of the Flamingo from a sufficiently close distance: hence, even up to the present day, there exist opinions—amongst naturalists, too—respecting this bird, which are far from being correct.

The Flamingo is a *swimming* bird,—and one of those which are furnished with sieve-like bills similar to the Swan, Duck, and Merganser,—and not a *wader*, as is usually supposed. It only resembles the Heron in one respect, and that is in the length of its legs and metatarsal bones. With the sifters, however, it possesses, both externally and internally, several points in common: head, beak, wings, webbed-feet, plumage, and the interior economy, all agree in the main, with the above-mentioned class of swimming birds, though in some way differing therefrom. The likeness of the Flamingo to the Heron is only apparent, and not real; and yet the Flamingo stands alone amongst swimming birds. Perched upon a pair of legs twenty-eight inches in length, there rests a gracefully and delicately built body: this, again, bears a neck two feet long, which is surmounted by a thick head furnished with a beak, which can only be compared to a snuff-box, inasmuch as the lower mandible is deep and roomy, while the upper one is flat and forms a lid to its companion; the white plumage is tinted with a tender rose-colour; the wings, however, are bright rose-colour; the feet and base of the beak are also rose-coloured, the end of the beak and the pinions alone being black. Take the entire class to which the Flamingo belongs, and you will not find another bird resembling it either in form or colour. The size varies: I have examined males which measured four feet in length, and almost five and a half across the wings; whereas I have also measured females scarcely three feet six inches long by five in breadth, without mentioning birds which were much smaller.

Our extraordinary friend is a native of the countries bordering the Mediterranean, but is more often met with to the south and eastward than to the north and west. There exist allied species, both in South Africa and America. All of these species frequent the shores of the coast, as well as the salt lakes and swamps of the lands they inhabit; except when they are perforce driven inland, such as those which have been shot on the Rhein and Lake Constance. During the summer Flamingos live in pairs, and in the winter they assemble in immense flocks, when they do not permit any other bird to intrude on their privacy. After breeding and moulting one may see them arriving at their favourite localities in endless strings. The different families collect together in troops, and seek a suitable spot wherein to pass the winter sociably together. In the spring they again separate for the purpose of breeding, the immature individuals amongst them alone remain wandering in a purposeless manner about the country.

Flamingos are rarely met with on reedy or sedgy shores, but more generally by sheets of open water: they usually stand with a considerable portion of their legs immersed in the water, seldom alighting on the lesser islands or stepping ashore. They walk pretty well on land, though their movements are somewhat unstable:

the neck is carried in the form of an S, the head being laid close to the same; and it is only when on the "look-out" that they stretch their necks out in the unnatural manner in which stuffed specimens and drawings so often represent them. When perfectly at rest the neck is contracted, so as to appear as if swallowed, and is laid against the breast, the only position which would render it possible for the bird to hide its head under the feathers of its back; on such occasions it stands on one leg, the other being drawn close up to the body. The Flamingo swims well in deep water, and often does so without being obliged. This bird's flight is easy and beautiful: the motion of the wings is somewhat rapid, rarely gliding; the neck and the legs are extended, and thus look extraordinarily long and slender, the bird having, when soaring, the appearance of a regular cross. Like wild Geese, these birds fly one after another, though generally in single file, and not in the form of a wedge. A large flock of Flamingos form a splendid spectacle when seen in the light of a southern sun. Their note is a hoarse, though not loud, "crāk" or "craik," to which that of the wild Goose seems musical in comparison.

The Flamingo is excessively shy and cautious; a flock will never allow a boat to approach within shot during the daytime: the elders of the troop keep watch, and are not easily deceived. Solitary young birds are, on the contrary, seldom shy: one of the latter allowed me to approach it on the shores of the Red Sea in the most unconcerned manner possible, and naturally paid for its temerity with its life. Those that I saw in captivity all conducted themselves most quietly and sensibly from the first day they were caught, although they showed a certain amount of anxiety, which only disappeared with time. After a few days they learned to distinguish their keeper from strangers; and from that time permitted themselves to be treated almost with the familiarity of domestic animals. They live on good terms with other birds, and surpass all other members of their family in good-nature.

The food of the Flamingo consists of the following:—small fish, tender molluscs, crabs, insects and worms, and similar creatures; these are caught near or on the bottom; the beak, however, is held with the upper mandible towards the ground, and the lower one uppermost. In this manner the bird moves backwards and forwards, stirring up the mud or sand with its webbed-feet even when stationary, and moving them continually up and down without materially altering its position. The head, deep under water, is kept moving and feeding, like a gudgeon or a barbel, close to the ground, between and about the legs, sifting, so to speak, all that is nutritious from what is stirred up. The mode of feeding pursued by the Flamingo differs from that of others of the Duck tribe, in the assistance derived from the feet, and the reversed position of the beak, the shape of which renders it necessary for it to be used in the manner described. Even when in confinement these birds are continually seeking and hunting for food, after this fashion, and only feed in comfort when their food is placed in a dish half-filled with water. They feed readily upon soaked wheat, rice, bread, and other vegetable substances; and if animal food be added thereto, and they are sheltered from severe cold during the winter, they will live for several years.

With respect to the breeding of the Flamingo we possess, as yet, but scanty information. Unfortunately, during my stay at the lake of Mensaleh, I was unable to obtain any personal information on the subject. I heard this much, however, on all sides,—that the Flamingo breeds in April and May on the small islands in the lake, where it builds a flat nest of sedge and reeds, and lays from two to three eggs. I once extracted an egg from the ovary of a female which had been shot: it was pure white, the shell rather smooth, and scarcely smaller than that of our Goose. All Arabs, who were well informed on the subject of which I spoke, assured me that the Flamingo sat on her nest with her legs bent under her—and not like a man on horseback—on the top of a hillock of mud. As regards the rearing of the young, unfortunately I could glean nothing.

I was more successful in learning the methods by which Flamingos are captured. I was well aware that these magnificent birds are much persecuted on account of the gastronomic value attached to their rose-red flesh, and have seen them brought to market by dozens, but I could not conceive how they were caught; this riddle, however, was one day solved for me by an old fisherman; the deed is done in the following manner:—At night a common fishing-net is stretched out between two boats, which sail down upon a flock of Flamingos: the frightened birds rise and become entangled in the net, whence they are extracted by the boatmen, who wring their necks. In this manner fifty or more are sometimes taken out of a single flock. The following mode of catching these birds is still more extraordinary:—After having during the daytime ascertained the roosting-place of a flock of Flamingos, the hunter proceeds at night with the utmost caution, on a raft of reeds, to seek out the "tschausch," or sentinel: he is discovered standing bolt upright, whilst the others remain fast asleep with their heads under their wings. The man now noiselessly enters the water, stripped, and—half swimming, half crawling—approaches the watchman under cover of a bundle of rushes, which he pushes before him; lays hold of him suddenly, pulls his head and neck under water, where he at once wrings it; the hunter's companions now seize upon some few of the sleepers, serve them the same, and hang them up. I would not have believed this story had I been otherwise able to account for the products of their chase.

It is highly probable that the Romans were acquainted with similar modes of capturing these birds, of which such large numbers used to be served up at a single feast; indeed, entire dishes are said to have been handed round whose principal ingredients consisted of the tongues and brains of Flamingos. That these form a most delicate dish I have proved to my own entire satisfaction.

Nowadays Flamingos may be seen in all the larger zoological gardens, and in some cases in regular flocks. They are, however, still rather dear, though easy to keep, and, being show-birds, ought not to be wanting.

CHAPTER VII.

THE WILD SWAN, OR HOOPER
(*Cygnus musicus*).

> "And mark the Wild Swans mount the gale,
> Spread wide through mist their snowy sail,
> And ever stoop again, to lave
> Their bosoms on the surging wave."
>
> SCOTT.

A PRIMÆVAL legend, handed down to us from the ancients, has an echo in every language of the civilized world. It tells us of an expiring being which met death with a song, whose very last breath was melody. Poetry has raised this story to the form of fairy tale, and yet there is something of truth in the matter.

The Wild Swan, so gracefully enshrouded in this legend, resembles its brother, the Mute Swan (*Cygnus olor*), the graceful tenant of our ponds and lakes, both in size and colour, though differing from it in being more plump of form and possessing a shorter neck, as well as the absence of the tubercle on the beak, and the number of the tail-feathers being less. It is five and a half feet long by seven and a half in breath; the female is considerably smaller than the male. The plumage is snowy white; the beak, orange-yellow at the base, otherwise black like the feet. The construction of the trachea, or windpipe, is singular, descending as it does between the branches of the merry-thought to a level with the keel of the breast-bone, or sternum. The keel of the breast-bone is double, receiving the tube of the trachea between its two plates, which, after running nearly the whole length of the keel, turns suddenly upon itself, passing forwards, upwards, and again backwards, till it ends in the vertical bone of divarication, from whence the two long bronchial tubes go off to each lobe of the lungs. To this arrangement, doubtless, is the beautiful note of the Hooper due.

The Wild Swan is found in certain localities in all northern countries in the New, as well as in the Old World; at sea, no less often than on inland lakes and swamps. It is a regular visitant to the shores of the North and Baltic Seas, as well as the Arctic Ocean. It migrates to the south of Europe, Asia Minor, Northern Africa, and is, therefore, not unfrequently met with in Germany, while on its journey southward. Muddy lakes and swamps, interspersed with large sheets of water, are its home during the breeding season, whilst in the winter it frequents the low shores of the sea-coast. The Hooper rarely remains long on deep water, as there it would be unable to obtain its food, which it gleans from the bottom, and consists of various aquatic plants, insects, worms, and molluscs; possibly also small fish: out of shallow water this would be impossible.

Its habits are similar to those of other members of the same family. The Swans are the most noble of all our swimming birds, but the art of swimming is the only one in which they excel. A motionless Swan resembles a Goose; one in the act of walking waddles heavily like a Duck; and when flying it only assumes a graceful appearance after it is well under way. The Wild Swan rises with difficulty from the water, making a noise which may be heard a long way off. The slim neck is outstretched when the bird commences to move, half flying half running, and thrashing the water with its feet and wings, so as to raise a cloud of spray visible at some considerable distance: this style of locomotion is pursued for from forty to eighty yards along the surface, until the bird at last rises with slow, measured strokes of its pinions, which may be heard from afar, and sails smoothly away at a pretty good pace. The whistling of a flock of Wild Swans when flying high overhead is pleasant to the ear: their flight then sounds somewhat like distant bells. In descending, the bird takes an oblique direction towards the water, thus gliding on some distance over the waves, or bearing itself up from them with its feet, so as to lessen the otherwise inevitable shock. It is only when the Swan has alighted, and swims on, that it is seen in all its beauty: then the long neck is laid in those soft curves, the wings are raised, and the bird assumes that graceful form which has caused the poet to elect it as the type of the highest beauty, which the most cold-blooded individual cannot but look upon with wondering eyes; the slim body sinks but little beneath the wave, the broad paddles propel it easily and lightly forward,—passion seems to live in every motion, and renders each one more beautiful than the last.

The Hooper is less graceful in the act of swimming, but a better walker than the Mute Swan, and surpasses it in voice, though the appellation of Mute Swan is entirely a misnomer, for that bird possesses a powerful note, which is, however, certainly not so musical as that of the

Hooper. Homer speaks of the song of the Swans, which he saw at Kaystros and Peneios, and interprets the same as a meed of praise rendered to Apollo. Æschylus first makes mention of the Swan singing when dying; and Plato affirms that its last song is more joyous than all former ones, for it sings, conscious that after death a better life is in store for it, and that it will return to the God whose servant it is. Aristotle does not doubt the truth of this interpretation, but Pliny does, though possibly the latter only observed the Mute Swan. In our time we hear nothing further about the singing Swan, though the legend still remains, and both it and the bird itself are surrounded by a halo of poetry. In the middle of the last century Mauduit again speaks of singing Swans, which were captured, tamed, and brought to Chantilly; and from that time other observers have expressed themselves in a similar manner. The Icelander, Olaff, speaks of the song of the Wild Swan as being the most beautiful winter music that the Norseman possesses; he likens it to the tones of a violin. Faber says that the Swan, when flying in flocks high in the air, utters sounds which resemble those of a trumpet, when heard at a distance. Pallas speaks most enthusiastically of these notes, and compares them to those of a pure silver bell: he is the first person who has remarked that the death-rattle of a Hooper, when mortally wounded, is still musical. Ermar agrees with him, and adds that no animal that he is acquainted with is capable of producing so pure and clear, so silvery, a tone as that of the Wild Swan. Naumann very correctly renders the ordinary note of this bird by the syllables, "killkleeh," and the sound uttered when on the wing by "klung:" this last he terms the song, and the rustling of the wings the accompaniment; thus it is that one only hears sounds from Swans when on the wing, resembling either bells or the notes of a trumpet, which in this manner may be compared to music. "And one may reasonably believe," he adds, "that the airy ring of those sad, beautiful notes, uttered, as they are, by the passing flock, which is, so to speak, DYING AWAY, may have been so termed by the poets in a figurative sense," when speaking of the song of the Wild Swan. Schilling, an excellent observer, contradicts him, saying: "In hard frosts—when the open waters of the lake are frozen over, with the exception of those places where the currents are strong, that is to say, the shallower portions which form the feeding-grounds of the Hooper—these magnificent birds assemble together in hundreds on the open water, and in their sad, lovely tones seem to lament over the misfortune which deprives them of food; for their numberless voices blending together may be heard in the long winter evenings, and through the livelong night, for miles. Sometimes this rich, harmonious call resembles the sound of bells, and at others that of wind-instruments, only that they are not quite the same, but surpass them in many respects, inasmuch as, proceeding from living creatures, they are more in consonance with our feelings than those caused by dead metal. This singular song verifies in good truth what is only held to be a poetic legend, for it is in reality often the death-song of these beautiful birds, inasmuch as when swimming on the deep water, and unable to obtain their food at the bottom, as is their wont, they become so weak from hunger that they are incapable of migrating to warmer climes: then they are not unfrequently found frozen to the ice, either dead or dying of starvation; *but even to the very last they utter their sad, clear, melancholy note.*"

These last words bring us back to the legend with which we started. The Swan, like many other birds, utters sounds when dying, but these cannot be termed a song. Its anxious call for food and its death-cry are musical, but do not amount to a melody, as the poets would fain have us believe; there is no joyous jubilee of sound uttered by the dreaming spirit as it seeks to loose itself from the bonds of its earthly tenement: *the dying bird is no longer capable of song.*

The Swan is a strict monogamist,—once paired, paired for life. The couple leave their home in October and November if food is scarce, and migrate in company to foreign lands, live there during the winter in the closest companionship, returning home again together in February or March. They love solitude, and from this cause will not allow another pair to intrude upon their beat; still the pairs visit one another on either side, because two males like occasionally to have a "set-to." When two or more pairs inhabit one lake the males mark out certain boundaries, and attack any trespasser with the greatest vehemence; all intruders are driven back. The male shows himself off in all his beauty for the gratification of his mate, displaying all his powers in the art of swimming, and putting himself in the most graceful attitudes. The large nest is either placed on a small island, or forms a floating structure on the surface of the water. It is strongly or loosely built, according to the structure of the different aquatic plants of which it is built; but be it firmly or loosely put together it is always strong enough to admit of both partners sitting on it at the same time. In ponds or lakes where these birds breed regularly, each pair uses the old nest as a foundation for the new one, and only add to it. In the middle of April, but in the north only in the beginning of May—the female lays her first egg, and each succeeding day another: the total number being from five to seven; they resemble those of the Mute Swan, measuring from four and a quarter to four and a half inches in length, and are three inches wide at the thickest part; the shell is very thick and smooth, and of a dirty green colour. The female alone broods the eggs, which are hatched in from five to six weeks; yet the male remains faithfully by her, often sitting for hours on the nest alongside of his mate. The first day after the young are hatched the mother warms and dries them till the following morning, when she leads them to the water, where both parents undertake their charge, caring for and watching over them, as well as instructing them how to procure their food. They shelter and defend the young Cygnets against all dangers with great courage and impetuosity; and, if much disturbed, will conduct them to some other water. The Cygnets are so well defended by their parents that birds of prey do not often care to attack them; four-footed vermin, however, do occasionally manage to destroy them, despite the resistance offered by the old birds. At first the young seek shelter under the feathers of the mother, and often mount on her back to rest, while she continues swimming; later on, they sail away between the two parent birds. The Cygnets are full grown and able to fly by the time they are three months' old, and when a year has passed they change their gray dress for that of the adult bird.

Cygnets are easily tamed: they are caught by the help of a boat, and then pinioned. In a short time they become half tame, in the same degree as our Mute Swan, get used to man, and feed, as before mentioned, on different species of aquatic plants.

Old birds are difficult to keep alive when captured. Swan shooting is a sport which is rarely successful, unless the rifle is used, and even then the birds often manage to evade pursuit by their caution and shyness. The gunner will be most successful if he uses a good sailing-boat, for they cannot rise with the wind, and must turn, therefore, towards the sportsman, who brings them down when on the wing.

When the booty has been secured it is of some considerable value; for although it is true that the flesh is not worth much, still the plumage is valuable: wing-feathers, body-feathers, and especially the skin, with the down on, which is esteemed a very beautiful and warm article of dress for ladies,—all are useful. The down itself is scarcely less valuable than that of the Eider Duck, and forms excellent material for pillows and feather-beds.

CHAPTER VIII.

THE EIDER DUCK
(*Somateria mollissima*).

> "The waves may rage and the winds may roar,
> But he fears not wreck nor need,
> For he rides the sea, in its stormy strength,
> As a strong man rides his steed!"
>
> MARY HOWITT.

HE who imagines that the vertical rays of a tropical sun alone are capable of producing, as it were by magic, those brilliant colours which decorate the plumage of the bird,—that creature loved of the light!—must see the Eider Duck, so as to enable him to acknowledge his error. However beauteous and brilliant may be the plumage of the feathered denizens of Southern America or Southern Asia, they most assuredly cannot surpass that of this arctic child of the ocean. I know of no other aquatic bird which possesses a more lovely dress than the Eider Duck: black, red, ash-gray, ice-green, white, brown, and yellow, intermingle with each other, so as to form a robe of extraordinary beauty.

We possess three species of Eider Ducks in Europe, but which one bears off the palm for beauty is difficult to say. The colouring of the species we are now about to describe is as follows:—breast, belly, wings and tail, lower part of the back and ventlet, forehead, a stripe through the eye, beak and feet, are black; the neck, back, a bar across the wings, and a spot on the side of the lower portion of the body, are white; the cheeks are tinted with a tender shade of green, that can only be compared to the colour of the ice; the upper portion of the breast is reddish.

The Eider Duck is distinguishable from other Ducks by its superior size, its length being twenty-six inches, and its breadth forty-five. Its shape is rather heavy: to a broad, flat body are attached a pair of short legs and feet, which are placed very far back; the neck, short and strongly made, is surmounted by a somewhat large and extraordinary long head, which is remarkable for the unusually long, low, narrow forehead.

The movements of the Eider Duck ashore are in strict accordance with its clumsy build; this, however, is not a matter for astonishment, for it is exclusively an aquatic creature: when walking quickly it stumbles and falls continually, and its flight seems heavy and laboured; but as a swimmer and diver the Eider Duck shows itself highly accomplished. It will swim and dive in the roughest surf, using its wings as fish use their fins. The sea is its real home, and is rarely abandoned, except from necessity or when breeding. Far out at sea away from the coast, except when nesting, one may often recognize the snowy white male, whose brilliant plumage renders him visible at a long distance off, and hear the low "ahu, ahua," which greets the visitor's near approach, and which also serves to call these birds together; for let it be observed that Eider Ducks are very sociable, and always to be found in flocks; besides which they will attach themselves to flights of other Ducks, and are, indeed, on good terms with all other water-fowl.

The food of the Eider Duck consists entirely of shell-fish, crustacea, small fish, and fish-spawn: shell-fish are, however, under all circumstances, the great stand-by, the crop and stomach are always full of them, the hard shells supplying the place of the small stones or gravel which other members of the Duck family swallow to aid their digestion. The Eider Duck procures its nourishment by diving to the bottom of the sea, and the abundance of living creatures which have their habitat there afford these Ducks food enough, and to spare.

These birds possess most interest in the eyes of man, and are of the greatest importance to him, during the breeding season. The pairs already begin to get together towards the end of March, and separate from the flock that remains. At this season of the year every fjiord in Norway, as well as the surf-bound coasts of Iceland and Greenland, are graced by the presence of these summer visitants. The male courts his "ladye-love" with his hollow, but not unmusical call of "ahu, ahua," to which she replies by a less euphonious "gak, gak," much after the fashion of other Ducks. In this way the different pairs pass the time round about the well-known breeding islands, principally in the neighbourhood of those where the coast is not too high, though affording sufficient shelter from storms from the seaward. Their numbers increase until the end of April, when they take to the land, where the female seeks an eligible spot for her nest. Man, who cares for sea birds just in proportion as they may be useful to him, sees, in the case of the Eider Duck, that all bushes and shrubs are carefully preserved, here and there arranging nesting-places, and even covering with old boards or a few branches such suitable cavities as he may find amongst the clefts in the rocks,—thus inviting these birds to breed.

Now the shore seems to teem with life. The females, preoccupied with the duties of progeneration, forget their inborn timidity, approaching man in all confidence, as though seeking his protection and desirous of becoming semi-domesticated. Unconcernedly they build their nests in the most convenient places, rarely uncovered, amongst the seaweed and large stones of the coast, but more often, and by preference, amongst the juniper-bushes, which are plentiful on these islands; also not unfrequently in the interior of the house and court of their protector: this last not only leaves them in peace, but takes the greatest precautions, and is, in fact, anxious, that they should not in any way be disturbed. The law protects these breeding islands from cockney sportsmen and other human disturbers of the peace, whilst the proprietor himself only carries a gun with a view of knocking over some rascally old Raven or greedy Skua, thus protecting his guests.

In many places the Eider Ducks are so importunate as to become a perfect nuisance to the owner of the house: one pair breeds under an up-turned boat, another selects the oven, and a third bothers the life of the "guid wife" in either parlour, stable, or kitchen. The nest, however, which the birds leave behind them, is sufficient reward for the inconvenience occasioned. It is composed of the softest and most valuable down, which the mother, in common with many other Ducks, plucks from her own breast to form into a lining, as well as a thick wall round the eggs. She then lays from four to eight, and sometimes even ten, eggs,—these are rather large, of a long-oval shape, and of a dirty green colour, sometimes grayer, sometimes bluer in tint,—and then she commences to incubate. After a few days she sits very close, permitting people to approach very near the nest. I often, when in Scandinavia, had the great pleasure of watching the Eider Duck while incubating. At first we found it very difficult to find the sitting bird, owing to the great resemblance of the colouring of her plumage to that of the ground and surrounding herbage; so great, indeed, that at a short distance the bird becomes invisible, added to which she possesses the singular habit of sitting with the wings partially expanded on either side, and the head stretched out in a slanting direction till the beak touches the ground. If the nest is placed in a thick bed of seaweed, or half-hidden under a scanty bush, one does not remark the bird until standing right before it.

It is impossible to imagine to oneself a more delightful picture of trustfulness than that afforded by an Eider Duck on her nest. As you approach she looks up with an imploring glance, and if you bend over her she will remain quite quiet, as though no harm could possibly arise out of your visit. On breeding islands, where there are no human habitations, the Eider Duck, it is true, is much shyer than in the neighbourhood of man, but even in such places they will allow you to come very close to them before they will rise from the nest. Several females allowed me to lift them off the nest and replace them again; I might feel and examine the eggs under them, stroke them and touch their beaks; they would only playfully nibble my fingers, without taking any further defensive steps. If I took one up and carried her some way from her nest, she would, on being placed on the ground, immediately waddle off to her charge, rearrange the down, and resume her seat as before. Those, even, which showed symptoms of shyness by flying off to the sea did not remain long away, but soon returned to their nests again. I remarked one thing, and that was that those females which were disturbed from the nest always soiled their eggs with excrement as they rose, while the eggs of those birds which remained quietly seated were uncontaminated.

The female only takes a hasty leave of her nest for the purpose of feeding, and then she always carefully covers the eggs with the wreath of down, thus keeping them warm and sheltered during her absence. The sea, in the neighbourhood of the nest, however, is so rich in shell-fish that she returns in a quarter or, at the outside, in half an hour to her charge, and, as soon as she has dried and preened her feathers, she recommences sitting.

The habits of the males during the breeding season differ widely from those of the females. The former rarely go ashore with their spouses, but rather collect together in large flocks and sport amongst themselves. One cannot exactly say they are shy,—at all events, not in comparison with their conduct at other seasons of the year,—but for all this they always keep out of reach of man. Some few males go on land with their mates, and keep watch by the nest. If one approaches them they move about uneasily, hold up their heads and snarl, though they do not dare to attack the intruder. These are, however, exceptional cases; the mass of males remaining at sea, and forming round the island a wreath, which looks as though woven of the most beautiful roses, so brilliant do the rich colours of these birds appear in contrast to the dark sea waves. To see and watch the male Eider Ducks from the summit of a breeding island is a sight which has not its equal.

In Norway the down is only taken from the nests after the young have been hatched, whereas in Iceland the nest is robbed of its beautiful soft contents as soon as the bird has lined it. The female must now perform the self-denying operation a second time, and if she falls short of material the male makes up for the deficiency. The eggs also are taken, and the bird forced to lay twice or three times the normal number required. In Norway the people have more sense, and manage to make a good trade as well, for the eggs are hatched in three weeks, and the young immediately follow the mother to the water, when the down harvest can be gathered. It is a pretty sight to see the old mother conducting her brood to the sea. When the nest is situated near the shore the proprietor leaves the care of the young to the female, and she, as soon as the ducklings are half dry, waddles straight off with them towards the sea; when, however, the island is larger, and the Eider Ducks breed more inland, the careful owner puts the downy brood into a basket and carries them down to the water's edge, while the old bird quietly waddles at his heels, following like a dog, apparently aware that the youngsters have only been taken from her so that they should be protected from the thieving Ravens and Skuas. When the youthful family has reached the sea its members are quite safe, for the ducklings are at home there the instant they arrive, swimming and diving in the prettiest manner imaginable, soon learning to get their own living. Two or three mothers will often unite together with their families; the fathers, however, take no part in the education of the youngsters, but become daily more and more estranged from their spouses and families: the latter only require attention for a few days. When quite young it often happens that half the brood, tired with their exertions, climb up on the mother's back, and rest themselves there in comfort; after a few days, however, they feel self-reliant enough to make their way in the world, or rather through the water, though still under the leadership of the old bird.

I have often amused myself by following an old Eider Duck and her brood with our fast boat, manned by a strong crew, so as better to observe the family. As soon as the boat approached, the old bird began swimming with all her might, with the youngsters following in a string, owing to the little creatures not being quite so well up in the art of swimming as their mother. When the boat got quite close, then an exhibition of diving ensued that made it a pleasure to watch the pretty, active little creatures. Sometimes we managed to cut off the old bird from her brood, so that she became obliged to seek safety in flight: they were now deserted, but still not helpless, as they immediately made for the shore, which they managed to gain, and then, climbing and tumbling in all directions, ran off, like young Partridges, hither and thither, until they all soon managed to hide themselves amongst the stones. Being experienced in such ruses I hunted about, until I succeeded in capturing them all, and carried them into the house: in the room, they ran about without ceasing, trying to hide themselves as well as they could. If, after a time, I let them out one by one, the whole batch called themselves together again, and made the best of their way instinctively to the sea, where the anxious mother herself awaited them.

With the exception of the Sea Eagle and the Iceland

Falcon the Eider Duck has but few enemies, for the Lapps and Greenlanders are the only people who persecute these useful birds. In Norwegian Lapland and Finmark their wanton destruction has been entirely done away with, owing to the laws enacted for the protection of the Eider Duck having been made more stringent. The young birds, however, are subject to other and greater dangers. The Raven is most destructive to both eggs and young, and Skuas often pick up one of the brood from the shore while they are basking and preening themselves.

Excepting during the breeding season it is not exactly easy to shoot Eider Ducks, as they will rarely allow the boat to bring you close enough to make a successful shot; besides which they die very hard, and the closeness of the plumage prevents the shot penetrating. Their utility for the table is infinitely less than the value of their plumage, as the flesh tastes fishy and strong, while the magnificent down brings in a considerable income to the island proprietors. It is true that at least thirty nests are required to produce one pound weight of pure down; but as a moderate sized island will accommodate often from three to four hundred pairs, and that it is otherwise utterly unproductive, Eider Ducks must be regarded as a veritable blessing, poured by the ocean into the lap of man. Up to the present there is but little eider-down exported from Norway, for every Norwegian, even to the poorest fisherman, likes to sleep under an eider-down quilt. From Iceland, however, and still more from Greenland and Spitzbergen, a large quantity of down is annually exported: this is estimated on an average to amount in value to 10,000 thalers per annum; thus it will be seen that this trade is of great importance to the inhabitants of these desert coasts.

Eider-down is the lightest, softest, and most delicate, to be found amongst aquatic birds. Three—or at the very outside four—pounds of it are amply sufficient to fill a large coverlet, and this coverlet is of itself enough to keep a person warm in the coldest northern winter; and as a pound of down is, at the present moment, worth, on the spot, four thalers of our money, it is not always so very expensive to sleep under an eider-down quilt.

The Greenlanders make the skin of the King Duck (*Somateria spectabilis*) into shirts, by leaving the down on the skins, and sewing them together with the down inside.

The Eider Duck cannot be kept for any length of time in captivity; not that the necessary food cannot be obtained for them,—but the sea is wanting. In the hot summer days they fade gradually away: they lose their habitual liveliness; do not remain so long in the water; dive seldom; often retire to land, where they will sit and sulk for hours in the same place, almost without moving; at the same time the appetite fails; they rapidly become thin, get weaker and weaker, and at last pass away without pain or struggle,—the true cause of this pining away being most probably home-sickness.

CHAPTER IX.

THE GULL

(*Larus*).

A FAMILY PICTURE.

> " In-shore their passage tribes of sea-gulls urge,
> And drop for prey within the sweeping surge;
> Oft in the rough opposing blast they fly
> Far back, then turn, and all their force apply,
> While to the storm they give their weak complaining cry;
> Or clap the sleek white pinion to the breast,
> And in the restless ocean dip for rest."
>
> CRABBE.

LET the seaman sail as far as he may, north or south, he always meets with the Gull,—" the Raven of the sea." Like Ravens and Crows, ashore, Gulls possess really no fixed home,—they are cosmopolitans. They are found spread over every sea; on every ocean some members of the family are to be met with: they are, however, never seen far out on the open sea, but always prefer the immediate neighbourhood of the coast, only quitting the same by force of circumstances;—that is to say, when driven by stress of weather, rarely getting farther than twenty miles from land. It is the Gull that first greets the eye of the wanderer when homeward bound; and it is to the Gull that the emigrant bids his last farewell, when seeking his new home in a foreign land. These birds follow every ship, that trusts herself on the bosom of the ocean, for miles on her journey, and accompany her from the open sea to the coast. Everywhere their presence may be regarded as heralding the latter, and as an infallible sign that it is not far distant.

Up to the present time close upon fifty different species of these pretty, restless, quarrelsome birds, have been described, and a considerable number of them have been met with on the German coast. Their habits are everywhere more or less alike, the Skuas alone differing from the general mass in the Falcon-like character of their mode of living: they answer to the Raven on land. They may justly be described as handsome, stately birds. Their principal colours are light bluish gray, white, and black; the underneath portions of the body, head, and neck, are always white; the upper parts of a uniform bluish gray, or slate-colour. Young birds wear, for a long time, a dress resembling the colour of their down,—that is to say, a dark or light brownish yellow ground, waved and speckled with a darker tinge. Sometimes the white plumage of the adult bird is tinted with the softest rose-colour, which renders it so beautiful as to vie with the beauty of birds of really brilliant plumage. The wing-feathers are usually black, the beak and legs yellow or red. Some species have black faces and heads. The Skuas have a dullish dress. Some are not larger than a Jackdaw, while others are as large as an Eagle.

Their build is excessively elegant, and not devoid of a certain amount of nobility: they walk well, and with measured steps, can run at a fair pace, swim in the heaviest sea with activity and "bottom," while their powers of flight are wonderful, even in the strongest gale.

All the different species—'cute, lively, active, and mobile, as they are—are gregarious, despite their greediness, jealousy, and envy. The manner in which they obtain their food is common to all, and seems especially calculated to keep them together; but greed and envy are so indelibly impressed on their character that all feelings of friendship are entirely disregarded when the two first-named vices make themselves apparent.

Gulls feed on almost everything, though mostly on living creatures, such as are thrown up by the sea or are caught by them; still, at the same time, the products of *terra firma* also pay toll. They devour the refuse thrown from on board ship; and, where they live on intimate terms with man, that of the kitchen is also laid under contribution: they feed besides on mollusks, crustacea, fish, and carrion. Gulls assemble in hundreds round the carcase of a whale, or any other large animal; they run about the fields like Rooks, busying themselves with the capture of insects, slugs, and worms. Flying low over the surface of the water they are ever on the watch, and if they espy anything eatable they dart rapidly down after it, describe a beautiful arc, and skimming lightly over the waves seize upon the coveted morsel, without actually touching the surface. Shell-fish are carried high up in the air and allowed to fall on the rocks beneath, by which means they are smashed, and their contents exposed to view. Gulls swallow everything in large pieces; for instance, shell-fish are swallowed shell and all, the pieces of shell assisting the operation of digestion. They do not spare birds or mammals that may be weaker than themselves, and sometimes mice are devoured when opportunity offers: these are swallowed with fur or feathers, as the case may be. In spite of their voracity they are rarely fat; this is probably owing to their restless activity.

The Gulls may be regarded as the most envious of birds: they grudge their fellows the smallest morsel, snapping it away even from the beak of another; and the Skuas will bully their weaker cousins, until the latter are compelled to throw up what they have swallowed.

These disagreeable attributes are counterbalanced, however, by others which tell to their advantage. As long as Gulls are in good health they are excessively clean, bathe freely and often, studiously avoiding places where they are liable to soil their plumage; thus it is that the white about them is so brilliant, that if the naturalist wishes to skin one for his collection he must take the greatest care if he would preserve its freshness. A flock of Gulls feeding on a green pasture is an exquisite picture. Unmolested as they are by the inhabitants of northern countries, they live with them on the best of terms; they frequent the neighbourhood of farmyards, visiting the very gardens, even, close to the houses. "Look at our Pigeons," said a native of Lofodden to me one day, pointing to some twenty Gulls that were running to and fro in a meadow in front of us: "Have you ever seen any more beautiful?" I could not but say I had not, for these dazzling creatures, on the carpet of green, really charmed me more than ever any Pigeons had done.

Gulls look still more beautiful on the billows. Their thick plumage will not permit of their diving beneath the surface of the sea, and they swim on the water as buoyant as corks. Imagine, then, what a sight it must be to see a flock of these birds, numbering some hundreds or thousands, floating on the dark waves of the heaving ocean. These ever-moving specks of white look like hundreds of bright blossoms: as each wave rises and falls, the sea, with its brilliant burden, seems a fairy sight indeed.

Their ordinary breeding places are rocky ledges, pinnacles and stacks, high and low islands, or the flat sea-shore itself. Those species which are seen furthest inland nest also in morasses. Each species usually breeds by itself,—at least one always meets with a preponderating number of one kind in a breeding place. The larger sorts alone nest occasionally in single pairs, that is to say, perhaps two or three in one and the same spot. The nests are placed close to one another, thus affording the sitting dames ample opportunity to indulge in chit-chat.

The nest itself is a rather inartistic structure, although it is never destitute of a lining of grass, haulm, and sea-weed. The eggs are from two to four in number: they are large and thick in the shell, of a dirty or pale greenish colour, more or less verging on brown, spotted with ash-gray or black. Both sexes incubate, though if the weather is hot they leave that duty for hours, to be fulfilled by the warm rays of the sun. The young are hatched in about three weeks, and are covered with a dress of thick down, generally spotted, and closely matching the surrounding sand in colour, thus rendering them safe from enemies, despite their helplessness. They soon leave the nest and run about the strand, watched and cared for by the parent birds. At the least alarm they speedily hide themselves under clumps of earth, plants, in holes, &c., and in cases of necessity seek safety in swimming. They grow rapidly,—and no wonder,—for they devour an incredible amount of food, so much so that the old birds are constantly engaged in providing the necessary quantity of nourishment. As soon as they are able to fly they learn, with the aid of their parents, to forage for themselves. The old birds defend them from danger with the greatest fury; Gulls, indeed, always attack an enemy most heartily and energetically when they have young.

On the approach of any bird of prey, such as a Raven or Falcon, all members of the colony unite together, and, mobbing the intruder, he is attacked on all sides with such vehemence that the best thing he can do is to decamp. They are well acquainted with their enemies, and soon learn to distinguish the gunner from the more harmless portion of humanity. Jealous, cunning, cautious and shy, as they are, it is rarely that one can manage to get a really good shot at one, though an unarmed individual is disregarded, and a boat containing unarmed people is passed at only a few yards distance. At their breeding places they dart down valiantly at the gunner, even, though he may have already shot several of their number. On landing on one of their breeding islands one is greeted by a terrific noise, emanating from a thousand throats: one Gull after another comes and poises itself, Falcon-like, in mid-air, and then swoops at the obnoxious intruder, generally to within a few inches of his head. At such times, and in such localities, the shyest species may be easily shot. Their greediness is also equally disastrous to their safety. When the first bird is shot one need only toss it into the air, and all the others immediately rush up, probably because they imagine that their defunct friend has found something that they can rob him of. Possibly the cause, for this extraordinary conduct, may only be the great curiosity which they all indulge in.

Their flesh is unpalatable, though in some localities young Gulls are eaten. By way of compensation, however, their feathers are used in the North for stuffing mattrasses, and are considered equal to those of Geese. Yet Gull shooting is not pursued for the sake of their feathers, but simply for the sport it affords; and I, for my part, must confess, that though the amusement is inexcusable, still it has much to recommend it in the way of excitement. Their thick plumage renders it difficult to drop the bird; and it is a rule with sportsmen never to shoot at a Gull unless its eye is clearly visible.

There is a small island on the Schlei, opposite the town of Schleswig, which is called "Gull-mountain," because immense numbers of the Laughing Gull (*Chroicocephalus ridibundus*) breed upon it. These Gulls yearly form the object of a grand *battue:* they are strictly preserved until the young are able to fly, and then, on a certain day, young and old go out and kill as many as ever a cockney sportsman could desire.

The proprietors of the wild-fowl islands of Scandinavia and Jutland have drawn up a special code of laws or regulations for the preservation of Gulls. No one is permitted to shoot there, and it is especially regarded as unsportsman-like to shoot a bird of which neither flesh nor feathers can serve a useful purpose; and the more so when, like Gulls, they are perfectly harmless, and please the eyes of everyone by the grace of their movements and their ceaseless activity.

All Gulls soon become used to confinement, and can be kept for years, provided that they are fed on fish or flesh, and that they are furnished with a suitable residence. They soon learn to recognise their keeper, coming to call, and greeting him on his arrival. They may be brought to breed without much difficulty, and can be so trained as to be allowed their liberty. Birds reared from the nest may be permitted to roam at will; sometimes they fly miles away, but do not fail to return to their master's farmyard or garden at "passage" time in the autumn, when they are not unfrequently accompanied by some of their wilder brethren. Such captive pets are amongst the most agreeable that we can possess.

CHAPTER X.

THE ALBATROSS
(*Diomedea exsulans*).

> "High on the cliffs, down on the shelly reef,
> Or gliding like a silver-shaded cloud
> Through the blue heaven, the mighty Albatross
> Inhaled the breezes, sought his humble food,
> Or, where his kindred like a flock reposed,
> Without a shepherd, on the grassy downs,
> Smoothed his white fleece, and slumbered in their midst."
>
> Montgomery.

According to the usual notion a long sea-voyage is a tedious business, and yet the naturalist who has been for months at sea will testify to the contrary. Hundreds of objects are to be seen which render the voyage, to him, neither unpleasant nor unprofitable, and he is sure, at some future day, to look back upon the same with pleasure and gratitude. Naturalists are uniformly agreed that, of all the untold riches which the ocean affords, the winged children of the billows are the most interesting. Long after the screaming Sea Gull has abandoned the ship there always remain other birds which faithfully follow. They accompany the ship for weeks and months together, at times close at hand, at others, circling about, miles away.

The Albatross ranks first amongst these birds. It is a powerful, gull-like, long-winged bird,—a gigantic Storm

Petrel, in fact,—with a powerful body, short thick neck, large head, extraordinarily long narrow wings, short forked tail, and a very sharp trenchant beak, the nostrils of which terminate in short horny tubes; the feet are three-toed, strongly webbed, and the plumage very close and thick. The colour of the Albatross is white, with the exception of the black pinions; that of the young birds is speckled with brown, interspersed with curvilinear streaks on a light ground. The beak is carnation-red, yellow at the tip; the feet are reddish; and the eyes brown, surrounded with a ring of pale green. The total length of the bird is four feet, and its breadth across the wings ten feet.

Every sailor knows that when Albatrosses appear in large numbers the Cape of Good Hope is not far distant. Except during the period of the breeding season they are only met with in mid-ocean, and then rarely otherwise than on the wing. A definite limit cannot be assigned to the localities inhabited by this bird, for it is seen in every sea, though preferring the regions lying between 30° and 60° south latitude; and that zone must be regarded as its true home. Gould, during his voyage round the world, met with this bird everywhere within the above-named belt, though it occurred most frequently near the Cape of Good Hope, the Island of St. Paul, and Van Diemen's Land.

A careful naturalist, to whom we are much indebted for a great deal of information on the subject of sea-birds, says, that the powers of flight possessed by the Albatross are greater than those of any other bird that has come under his observation. Though the Albatross occasionally alights on the surface of the water in fine weather, still it is almost always seen on the wing, and glides just as easily over the glassy bosom of the ocean during a calm, as he wings his way with the speed of an arrow during the most terrific storm. Gould was astonished at the manner in which the Albatross glided over the crests of the waves and into the trough beneath. The fastest clipper is easily overhauled by this bird; and when a good ship, with a fair wind, has managed to run over two hundred nautical miles in four-and-twenty hours, the Albatross finds not the slightest difficulty in competing with it. For days and days together this bird will fly with the same rapidity, and without tiring, while at the same time it will make circuits of miles in extent round the ship, and then return again from time to time to pick up such refuse as has been thrown overboard. Frauenfeld estimates the distance covered by one of these birds in a day at over seven hundred and twenty nautical miles.

"It is delightful," says Bennett, "to watch the gloriously graceful movements of this splendid bird, which seem to impel it through the air as if by some hidden force,—for one can scarcely perceive the slightest motion of the wings after the bird has once got under way,—and one sees it rise and fall, in such a manner as to lead to the belief that these movements are brought about by some unknown power. The Albatross swoops down under the stern of the ship with an air of proud independence, as though he were lord of the ocean." The small amount of muscular action exercised by this bird renders it able to keep so long on the wing without resting. When it sees an object floating in the water it lowers itself by degrees with outspread wings, stooping down or swimming like a Duck while it takes its food. Then the bird rises and glides with outspread pinions over the surface of the sea, from which it often seeks assistance in attaining the necessary impetus, until beginning to soar upwards it again recommences its wandering flight. It is interesting to watch Albatrosses during heavy weather: they fly alike against and with the wind, revelling in the howling storm amongst the foaming billows. One will see them all but alight on the water, and then rise again without any apparent exertion on their part, and when facing the gale there is no perceptible alteration in the movement of the wings, though the progress is somewhat slower. Some people assert that the Albatross never loses way when on the wing, and that by "lying close-hauled," and tacking, it always manages to advance. This bird never soars to any great height. At times one would imagine that the bird was changing the direction of its flight, because it turns its wings and body sideways, and sometimes lowers the last joint of the wing when rising.

Like other Petrels, the Albatross is active both night and day, and seems to require scarcely any rest. During its even, never-ending flight it is ever watching the surface of the water for food: it feeds on everything of an animal nature that it can glean from the waves, and thus may be said to play the part of a Vulture on the ocean; it swallows with a never-ceasing voracity everything eatable which is thrown from the ship,—even the cunningly-baited hook by which it is captured. Hundreds of Albatrosses may be seen congregating round the carcase of a dead whale, or of a large fish, just as we see Vultures assembled round that of a horse or camel. When a whale is being "flensed" they become so importunate that they keep flying close round the sailors, and snatch pieces of blubber from their very hands. Their powerful beak is specially adapted for cutting to pieces any food they may come across: they will cut a thick piece of meat in two at a single bite, and with one blow of their beak tear a hole in the skin of the toughest inhabitant of the ocean. Besides carrion, they feed on jelly-fish, cuttle-fish, and similar aquatic creatures. When very hungry they scream without ceasing, and this is often a nuisance, as their note is anything but musical, resembling as it does the bray of an ass or the neighing of a horse.

They breed on solitary islands situated in mid-ocean. We have to thank an Englishman named Earle, who spent nine months on the island of Tristan d'Acunha, for an excellent description of a breeding place of these birds. He first tells us how he managed to climb the almost perpendicular wall of lava-rock so as to reach their nesting place, which consisted of a level flat, covered only with stinking grass and brake. "A death-like stillness," says he, "reigned at this elevation, and our own voices gave back a dull, unnatural echo to the ear, while our forms appeared gigantic, and the hot air seemed to pierce us: the spectacle, however, was grand in the extreme, and filled us with awe. Here the mighty Albatross had his home, undisturbed by the presence of any other creature: here no enemy intruded on his privacy; his young lay uncovered on the ground, where he had prepared a kind of nest by scratching up the earth. The nestlings were white, and covered with beautiful soft down. They snapped their beaks at our approach, thereby causing a considerable noise: this snapping of the beak, and a habit of vomiting up the contents of the stomach, seemed to be their sole means of defence. Five months later I climbed the rock a second time, and found the young birds still on their nests, which, apparently, they had never quitted." Cornick found the Albatross breeding in the months of November and December on Campbell and Auckland Islands, and states that the nest consisted of a heap of earth, into which dry grass and leaves were kneaded: it is six feet in circumference, more than two feet wide at the top, and about eighteen inches high. In over one hundred nests which this naturalist examined he never found more than one egg in each nest, with but one exception, on which occasion there were two. The eggs are about five inches long, by more than three inches in breadth, and white in colour. The Albatross may often be seen sleeping with its head under its wing while in the act of incubating; otherwise the beautiful white head is visible above the grass at a considerable distance. On the approach of an enemy the bird defends its egg, and will not abandon the nest until forced so to do, when it waddles away for a short distance as lazily as a Penguin, without attempting to fly away. The greatest enemy of the Albatross is an impudent species of Skua, who, as soon as it rises from the nest, darts down and devours the egg. The Albatross is well acquainted with this enemy, and, on observing him, snaps vehemently with the beak. Earle says that the young cannot fly until they are a year old. Gould doubts the correctness of this statement, although he does believe that a long time must elapse before the young bird becomes sufficiently developed to bear up the weight of its heavy body upon outspread pinions. The supposition, however, that the young do not leave the nest till the breeding season comes round again, does not altogether seem so preposterous, for young birds and eggs have never been met with at the same time.

Gould caught Albatrosses for the purpose of satisfying himself whether one and the same bird would follow the ship for days together. He found that the act of catching these birds could cause them but little pain, as when he fished for them the hook became fixed in the callous portion of the end of the beak. Thus, by degrees, he captured a large number of these birds, which he marked by cutting off one of the quill-feathers of the wing, and then let them go again. In almost every case the result confirmed his preconceived opinion, that the same birds which he had captured followed the ship, or reappeared again more than a hundred miles from where they were first taken. When an Albatross has been caught it may be safely left to itself, as it is impossible for it to rise from the deck: it remains quiet and unconcerned, even allowing itself to be handled, but stedfastly refuses food, nor will it permit you to cram it down its throat. This is the reason that they have, as yet, never been brought to Europe alive.

Albatrosses are often shot, for they always approach a boat to satisfy their curiosity. The thickness of their plumage, however, renders shooting at them with shot generally ineffectual. A winged Albatross is easily taken, as it cannot dive, and swims helplessly about on the surface of the water. There is only one species which, Gannet-like, can dive, so as to submerge the body.

CHAPTER XI.

THE STORMY PETREL

(*Thalassidroma pelagica*).

> "Up and down! up and down!
> From the base of the wave to the billow's crown,
> And amidst the flashing and feathery foam,
> The Stormy Petrel finds a home,—
> A home, if such a place may be,
> For her who lives on the wide wide sea,
> On the craggy ice, in the frozen air,
> And only seeketh her rocky lair
> To warm her young, and to teach them spring
> At once o'er the waves on their stormy wing!"
>
> BARRY CORNWALL.

THE ship drives before the raging storm. Darkness, like that of night, covers the sea, though it is mid-day: all colours seem merged into a neutral gray; the flashing foam on the crest of the billow, driven like white dust by the merciless gale, forms the one single particle of light in the otherwise dark picture.

Close under the ship's stern a dusky flock may be seen, swooping and skimming hither and thither. Ten or fifteen dark little birds sink from the crest down into the trough of the sea formed by the labouring vessel: these are "Mother Carey's chickens," the "water-witches," Stormy Petrels, which are so familiar to the eye of the sailor, and the sight of which he dreads so much; Father Neptune's darlings, the smallest bird cradled on his bosom. We Germans often call them "Peter's birds," for they walk the surface of the sea. Besides these, they are called by many other names, all more or less bearing an ominously dread interpretation, for they are not well favoured by legend or story. These tiny, graceful beings, whose flight and movements possess such irresistible attractions, are the forerunners of the storm, under which weak man, left to fate, must perish. They are supposed to be the witches and chicks of Mother Carey, or Clary, who, by the way, must also have been a great witch and enchantress in her time. They are said, too, to be sent from hell, and to appear as "devil-birds," gliding and hovering over the corpses of the lost ones. No one, says the seaman, can tell you where they come from, where they live, or where they breed, though our ancestors say that they hatch their eggs on the foaming billow under their wings, and bring their young ones with them. Yet none know the truth. Only one thing is certain,—they not only foretell, but bring the storm; *they* raise the hurricane.

Silly tales! "Just as well," says Wilson, "might the sailor curse the friendly rays of the lighthouse, or the stars of the night which guide him on his voyage, the buoy or beacon which warns him of hidden rocks and shoals, as abuse the Stormy Petrel; for as these give notice of coming danger, so does the bird warn the mariner, and afford opportunity to make all snug against the evil comes." But even this statement is not well founded; for these harmless, trustful little creatures also show themselves when the wind is fair and moderate.

The members of the Stormy Petrel family consist of from ten to twelve species, closely resembling one another; there are also other Petrels, which are giants compared with their miniature brethren, T. pelagica. These are the smallest, as well as most graceful, of sea-fowl, and may, with truth, be called the Swallows of the ocean: they are unsurpassed in patience and endurance by any other bird that we have. They usually make their appearance on the wing, and for a long time it was thought that they never alighted swimming on the waters. I, for my part, have been lately informed, by a reliable informant, that he has seen them resting on the water for some length of time.*

The size of the Petrels is about half as large again as that of our Swallow; and the smallest species—the Stormy Petrel, with which we are now occupied—is six inches in length by fourteen from wing to wing. Male and female are alike, and the young birds are scarcely distinguishable from the old ones. All the different species wear the same dark, sober dress of rusty brown, verging on black, relieved only by an occasional white spot, band, or feather, by way of decoration. They inhabit the larger oceans, and only frequent lesser seas, such as the Baltic or the Caspian, on rare occasions, when driven by stress of weather. On shore they are strangers. It is difficult to determine the exact geographical range of each species, but it is not improbable that they are met with in all large ocean tracts. The mainland is only visited by these birds when seeking a nesting place for their single egg,—a safe home for the child of their affections; otherwise they live from year's end to year's end—day and night, by fair weather or foul, in sunshine or cloud—on the sea.

It is highly probable that they are nocturnal birds, or rather birds of the twilight, than diurnal. When the ocean is calm they generally approach the ship, about sundown, in small parties of four or five, ten or fifteen, and often even in large flocks of more than fifty at a time. They assemble in the wake of the vessel, turning against the wind, and gliding without a beat of their pinions close over the surface of the waves, always keeping at the same height from the water, cleverly rising and falling in unison with its every motion. Sometimes they literally run, after a singular fashion, over the surface of the billows, aided by the points of their wings, but never for more than a short distance at a time: this is effected by just touching the surface continually with their tiny feet and springing from it again; it looks as though they were dancing over the crests of the waves. This dainty child of the sea will rest for a moment, apparently motionless, on any floating substance able to support its weight, by pattering lightly with its feet, half supported, by the action of the wind, on its raised pinions: at the same time they always keep their eye on the water, and are constantly engaged in picking up something from its surface. When dark clouds cover the heavens, and cast a mid-day twilight o'er the ocean, these birds are always more lively than on a calm, still day; and when the storm rages, black as night, and lashes the angry billows into foam, then only do the Stormy Petrels really seem to arouse themselves, and their apparently gleeful call, "vibb, vibb, ouay, ouay," is blended with the howling of the wind and roar of the sea. Their flight now becomes changed in its character: they dart like arrows far away over the ocean, describing bold circles, active curves, and turns of every description, moving their wings with intense force and rapidity; they hold their own with their heads turned in the very teeth of the gale, only remaining still for a few moments at a time. They will bravely defy the raging elements for days together, though if the storm lasts too continuously they at last become tired, and have to give in, in spite of all their courage: aye, many find a grave in the lap of their mother ocean, and many a one perishes miserably on the shore. Towards the end of a gale, that has lasted some considerable time, these little creatures will not only seek shelter under the lee of the vessel, but also under the land, probably less from fear of the storm than from the want of food, which now begins to be felt.

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* When on a voyage to Brazil, I saw a flock of these little creatures hovering round the stern of the ship when in the "Doldrums," on which occasion several of them alighted on the water. N.B.—The sea was as smooth as oil at the time, and we did not experience any foul weather subsequently to their visit.—*W. J.*

As far as we yet know they feed exclusively on medusæ and jelly-like animalculæ, which they glean from the surface of the water. Hitherto nothing solid has ever been found in their stomachs; only a liquid, oily substance,—but of that, plenty. Some have erroneously asserted this greasy matter to be fish-oil. Reliable authorities, however, are of opinion that it is nothing else than a solution of the component parts of these animalculæ. In heavy weather these tiny water-coloured morsels are certainly difficult to find, and at last are not to be met with at all; so that these otherwise persevering children of the storm necessarily become enfeebled, as does our Swallow by continued rain. Whether or not the aforesaid matter is really composed, as Pajeken supposes, of train-oil, or the fatty portions which float on the top of the water used for washing-up in the "caboose," and thrown over board, is still an open question.

Under the wretched pressure of an empty stomach the wonderfully lasting energy even of the Stormy Petrel's wing must flag in the end, and the bird be compelled to seek a locality where it may hope to find food.

Stormy Petrels have been observed, on the fourth or fifth day of a gale, hawking for hours near the ship, looking anxiously at the water; and they will often fly on the deck as though they, used as they are to the impetuosity of the stormy ocean, would seek help at the hands of the powerless sons of the earth. Under circumstances such as we have described they will assemble in flocks of thousands along the coast, and a few will take to the land as a last resource. Stormy Petrels have on several occasions been picked up, either dead or starving, along the French and Dutch coasts.

And yet the shore is not a friendly asylum, but brings with it, rather, the misery of a foreign land,—to them, at least: destruction in various forms stares these poor children of the sea in the face. It is true, with tottering steps they seek, as soon as possible, some hole or rift in which to hide: but death still follows in the garb of want; while outside, in the open, there is danger. It would seem as though on land they lost their senses, their courage, their very life. Simple-hearted and confiding, they let an enemy approach without attempting to defend themselves, or seeking safety in flight: the most they do is to cast up the oily matter they have in their stomachs; but this soon comes to an end, and with it the little creature's last and only weapon. Graba, to whom we are indebted for the most reliable and exhaustive information on the subject of the life of the Petrel on shore, says, that sound, healthy birds, even, possess no sense of fear or danger; how then can one expect sickly, that is to say, half-starved individuals to try to evade the attacks of land birds,—enemies possessed of any amount of sly cunning. They do not even recognize an enemy when they see him, and will allow themselves to be taken with the hand, or seized by birds of prey, without seeking to use their wings.

Stormy Petrels have often been found inland, when driven by stress of weather, generally in the neighbourhood of large rivers, over which they seem to skim hither and thither without definite purpose. One was killed in the town of Breslau by a coachman, with a blow of his whip; a second was caught under a hat, near a pond not far from Frankfort. Others have been seen and shot in Hamburg, Pomerania, Hesse, Wurtemburg, Baden, and Switzerland. They are sometimes met with on the coast in dozens, aye, even by hundreds.

These, however, are all exceptions, for the Petrel never comes to land of its own free will, excepting to breed. In the Hebrides and Faroe Islands their nests are found in the months of June and July. They use holes, scraped out by other sea-fowl, amongst the loose soil, formed of earth and stones, near rocks and boulders, in the immediate neighbourhood of the sea, and deepen them by a foot or so. The Stormy Petrel is, however, never seen at the mouth of the hole; probably only leaving or entering it during the night, sailing straight to and from the sea to its nest. The inhabitants of these islands have various modes of discovering the nest. One can tell whether a hole be tenanted or not by a singular churr or twittering noise uttered by the bird, and which is to be heard at night, or they can be detected by their powerful smell. Petrels when breeding may also be asked if they are at home or not! Graba was conducted by a Faroe boy to a loose stone-wall, supposed to contain Petrel's nests: here the boy applied his mouth close to every hole and called out loudly the syllable, "klürr;"

as soon as he came to one which was tenanted the bird instantly answered, "kekerek-ee," and repeated this answer as often as the boy called. Spades and crowbars were sent for to remove the stones: they worked, made no end of a noise, but still the bird remained quietly in its hole. At last Graba laid hold of the Petrel, who resented the insult by vomiting oil all over his captor, but did nothing more by way of defence,—neither bit nor scratched, but sat quietly on the open palm of the hand, without attempting even to fly away.

The nest consists of a few fibrous roots laid together, and contains only one white egg, which is, comparatively speaking, a very large one for the size of the bird, being larger than that of the Turtle Dove. Graba never came across colonies consisting of many pairs, but always found one solitary nest in each place. According to his observations the male and female incubate by turns, but relieve one another very irregularly. With regard to the method of feeding and rearing the young he did not succeed in gathering any information from his researches.

Nevertheless, we learn from him much that is very interesting about the conduct of a captured Petrel. Quick as these birds are in hiding from an enemy amongst the stones, yet they appear utterly helpless when once in his power. A Stormy Petrel, which Graba carried into his room, allowed itself to be taken in the hand without offering any resistance whatever, let him stroke it or drive it about just as he chose. When driven off it would trip a few steps with bowed legs, but always sat down immediately it was let alone. Then it would squat, motionless, on its tarsi, brooding and sad, with drooping head. The bird seemed to experience difficulty in standing, for, from standing, as if of necessity, it always relapsed into the position just described. As soon as the poor bird lost sight of the sea it appeared to lose heart altogether, and to become incapable of any effort of intelligence. Graba carried it on his open hand into the street, and at last to the sea-shore: before it smiled and rippled the creature's beautiful home; the flashing waves called it to their embrace; and still the bird seemed to take no notice, and remained squatting on the hand. At last the naturalist tossed the bird high in the air: suddenly the wings were expanded, and off it darted away in a curve, turned its head to the wind, and flew on strong pinions to seek its sublime and mighty parent.

The Stormy Petrel is neither snared nor otherwise made an object of the chase, as its body is too small and smells too strongly of train-oil to be fit for human food. It is no fable that if a wick be inserted into the dead bird's body it can be used as a lamp. The naturalist alone seeks its capture. The Petrel is very difficult to catch, and then only on land. In vain may we seek to capture the little fellow with a hook and line from the ship's deck: he will none of it, probably because the bait is not to his liking. To shoot him it is necessary to follow him in a rough sea in a boat, a proceeding which demands very good shooting; and on this account it is only remunerative to the naturalist to indulge in such sport. The latter is no very dangerous enemy to our graceful friend. The Petrel is not looked upon by him as a Jonah, devil, or witch, but as one of the rich flowers of the boundless ocean, which rejoices in its inmost soul over old Neptune, just as much as the sailor who calls the sea his home.

The naturalist looks upon the pretty creature as a graceful inhabitant of the ocean, wondering at the everlasting law of creation, which populates even the desert. He sees in the bird a friendly being, worthy of his love and observation.

CHAPTER XII.

THE GREAT CRESTED GREBE
(*Podiceps cristatus*).

> "Amid the foaming wave thou sat'st
> And steered'st thy little boat,
> Thy nest of rush and water-reed
> So bravely set afloat."
>
> MARY HOWITT.

THE Great Crested Grebe is also known by the names of Tippet Grebe, Crested Ducker, Gaunt, and Cargoose.* I can give no further explanation of the numerous local names by which this bird is known in Germany, than that it is certain that the creature rivets the attention of all who know it.

Our bird equals the Wild Duck in size, being from twenty-five to twenty-seven inches in length, by three feet across. The male is somewhat larger than the female. I have given an ample description of the form of the bird earlier in this work, and there remains, therefore, nothing further for me to describe now, excepting the singular and exceptionably graceful head-dress. Both male and female become possessed, as they increase in age, of two pointed tufts of feathers on the crown of the head, resembling horns, and about the cheeks a circular fringe, rather contracted under the throat, somewhat resembling a thick pair of whiskers: these decorations give the face a singular expression.

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* Brehm here gives a list of local names in German for which we have no equivalents, and but few of which are even capable of literal translation.—*W. J.*

The Great Crested Grebe is distributed over the whole of Europe, and when migrating is found as far as Northern Africa. It prefers fresh water to the sea, taking up its abode in lakes and swamps, and occasionally in small inlets of the sea, dykes, and brackish lakes. Inland the winter's frosts oblige it to migrate; while it will remain on the sea, almost in the same locality, from year's end to year's end, during the most severe weather. This bird migrates no further than is absolutely necessary, and winters, therefore, in Switzerland and Southern Europe. As soon as it is spring with us, it returns again, and that always singly; while in autumn it makes its appearance in large flocks. Its limited powers of flight oblige it to travel at night, though it will avail itself during the day of large sheets of water,—but not rivers, if it can avoid doing so,—and pursues its journey swimming. As soon as the bird has found a suitable locality it remains resident for a time, and thus affords us opportunity to watch its habits.

The Grebe may be seen on the move both day and night; and when it does sleep it is generally during the day. It pursues its avocations in the open portions of the water, some distance from the shore. It preens and oils its plumage, suns itself, and sleeps while swimming, as it manages to keep in the same place, in spite of wind and tide, by an imperceptible motion of the paddles, as they lay stretched out in the rear of the body. Towards dawn and dusk it approaches the shore, but never lands. It passes almost its whole life on the water, swimming or diving, in which manner it performs all functions needful to its existence. The land is in every way uncongenial to it, because its legs, which are placed so far back, oblige it to carry its body in a perpendicular position, and every step is a trouble to it. Just in an inverse ratio are its powers of swimming and diving, when compared with its walking capabilities. The Grebe can swim faster under the water than on the surface, and if not scared, submerges itself in the water without any noise, reappearing again equally silently. It can float as deep or as shallow as it likes, swim on its belly or on its side, as it may deem necessary. When threatened by danger the Grebe dives suddenly with a splash, and swims with such rapidity as easily to cover some two hundred feet in the space of half a minute: it makes for the centre of a sheet of water, where it remains diving until it considers itself safe again. When diving, the feathered horns and ruff are laid close to the head, so as to afford as little resistance to the water as possible. It takes wing with great reluctance, but flies with considerable rapidity when once under way. This bird cannot rise from the ground, and on the water it runs flapping along the surface for some distance before it is able to take wing. When near the nest it will only rise after having been persistently pursued; but in the autumn it will rise from the water of its own accord, probably with a view of practising and strengthening its wings ready for the coming journey. The Great Crested Grebe is a noble-looking bird, when seen in the act of swimming: the neck is carried in an upright position, and often stretched out quite perpendicularly, the ruff being alternately contracted and expanded. Both birds swim close beside one another: when one dives, the other does so also, their presence adding greatly to the beauty of a sheet of water.

The Crested Grebe is much averse to the society of other birds; and, during the breeding season, one may safely reckon that there will be only a single pair on a large sheet of water, for one couple will not tolerate the presence of a second in its domain. Nor does it associate much with other water-fowl; and if by chance it finds itself in company with Ducks and Coots it is sure to separate from them before long.

The surface of the water affords this bird but little in the way of food,—at the most a passing insect, which it will snap at and catch in the air, or an occasional frog or other similar creature. Its true fishing ground is in deep water, where small fish and the larvæ of insects abound. It feeds under water, only rising to the surface to devour such prey as may be larger than usual. It is a singular fact that this bird plucks its own feathers from its body, and swallows them. The elder Naumann first observed this, and his son writes, as follows, respecting this peculiar habit:—"The stomach of a dead Grebe often contains a ball of feathers, in which the food becomes enveloped during the process of digestion, and only shows itself, either whole or in particles, after becoming disentangled. These feathers seem to act with the Grebe —like sand or small stones do with many other birds— as a necessary aid to digestion, and are never wanting in the stomach: remove them, and it would then be entirely empty, and the bird die of hunger. Whether these feathers pass through the intestines, or are cast up by the throat, is at present undetermined. In the bird's fœces—which are liquid, chalky, white, and heavy enough to sink to the bottom—there was no trace of feathers to be found. The Grebe only plucks these feathers from the lower portion of the body; and this practice may be regarded as a kind of toying, when the pair pluck feathers from each other, the only occasion in which the feathers do not literally belong to the bird itself. Inasmuch as this operation is continually taking place, the feathers are constantly being renewed all the year round; thus the skin of the breast is never free from young feathers of every age. It has been supposed that the feathers used for digestive purposes were those of small birds; and our friend the Grebe has consequently been regarded with much disfavour, and accused of preying on other birds. Careful observation, however, has entirely proved the fallacy of such an idea, and that the feathers are those of the bird itself."

Unsociable as the Crested Grebe is towards other birds, so much greater is the affection which subsists between the birds themselves. The two partners are rarely, if ever, seen separately: they migrate in company,—at all events, they both appear simultaneously at the breeding pond. Every observer may remark how fond they seem to be of one another. When one is separated from the other it calls anxiously for its companion, until it returns to its side. While swimming they toy constantly with each other, their united calls blending in a singular kind of duet—the cry of the male being "keuk, keuk, keuk," frequently repeated, and that of the female "kraorr" and "kruor." The pair make preparations for nesting earlier or later, according as the young reeds begin to sprout. They seek out a spot, for which the different pairs dispute bravely, should there be more than one on the pond. The nest is placed in the neighbourhood of reeds, sedge, or rushes, always on the edge nearest the water, and as far as possible from the shore. It is constructed of reeds, sedge, rushes, and other aquatic plants, measures somewhat over a foot in breadth by about six inches in height, and is always floating, though anchored, as it were, by a few rushes or some sedge, to one place. The Great Crested Grebe seems to prefer those plants which it procures by diving: these are carelessly piled together in a heap, wet as they are, so that the whole looks like a lump of decaying vegetable matter, washed and swept together by the chance action of wind and water; so much so, that the practised eye will not be able to tell if it be a bird's-nest or not; it is always wet, and the eggs—which are of a dirty, greenish white, or sometimes yellowish green-white—lay more or less in the water, and in a short time become stained the same colour as the nest itself.

Each time that the female lays an egg she covers it with weeds, which are generally brought up from the bottom of the lake, together with the mud that adheres to them. During the period of incubation she is relieved by her partner, several times during the day, so that she may rest herself and feed. One of the pair is always sitting, probably to secure to the eggs that warmth so especially needful in their case, so as not to permit even of a momentary chill taking place. When a Grebe is disturbed from the nest it always covers it up, no matter how urgent the danger. The bird may be driven from the nest several times during the day, without causing her to forsake it. The period of incubation lasts three weeks. Rarely more than three young are hatched, one egg being generally addled, owing to the unfavourable circumstances in which it is placed. The youngsters leave the nest immediately they are hatched, and are the objects of great affection on the part of the old birds, who carefully instruct them in the art of swimming, and later on teach them to dive, after the manner already described. The father usually undertakes the duty of watchman when leading the family; and accompanied by his spouse, the two together bravely attack their weaker enemies. It is long before the young become able to fly, though in the meantime they have not only learnt to swim and dive to perfection, but also to seek their own nourishment.

The Great Crested Grebe is taken on the wing by the larger birds of prey, but never when swimming. It dives like a flash of lightning, so that the gunner must calculate his shot well if he wishes to be successful. Here and there this bird is much hunted for the sake of its skin, which is used for muffs and tippets, though it is incomparably inferior in value and density to the skin of a mammal. On this account this bird, which forms such a graceful adjunct to the beauty of our lakes and ponds, ought to remain unmolested. That it is really injurious to fisheries is an absurd idea; for if it does occasionally catch a fish or two, this cannot be held sufficient to counterbalance the good done by the bird in destroying numbers of noxious insects and their larvæ.

CHAPTER XIII.

THE GREAT AUK

(*Alca impennis*).

> " The heavy penguin, neither fish nor fowl,
> With scaly feathers and with finny wings,
> Plump'd stone-like from the rock into the gulf,
> Rebounding upward swift as from a sling."
>
> MONTGOMERY.

HERE we have standing before us, on the very verge of extinction, a most singularly-formed inhabitant of the northern portion of our globe. It looks like the picture of a being taken from some past creation, so antediluvian is it in form and fashion. Far away to the north, where bleak, barren lands rise up as though disputing the advance of man, where the sea adds new and unconquerable dangers to those which usually fall to the lot of the sailor, where the fierce cold heaps up the crystal waves into mountains, where the billows are at continual war with the rocky islets ;—there is its present home, if, indeed, this creature—lost sight of for years, in spite of all search—still has a home ; if inexorable Fate has not struck its name off the roll of living beings.

The Great Auk possesses but few relatives amongst the northern rock-fowl, though it is represented in the Antarctic Ocean by the Penguin. The arctic bird, however, differs from that of the southern polar regions, inasmuch as it possesses true feathers, and real wings furnished with quill-feathers, and wing-coverts, &c., but which, though of stunted growth, do not degenerate into actual fins, as with the Penguin, though they serve the same purpose. The rest, also, of the plumage of the Great Auk consists of true feathers, laid compactly and closely together, and not of the feather-like scales, with which the body of the Penguin is covered. Thus our bird belongs rightly to the Auks, though it may well claim cousinship with the Penguin.

This Auk is a bird of considerable size, measuring six-and-twenty inches long, of which only three are allotted to its stiff tail. Of the breadth of the bird there is little to say, each of its fin-like wings measuring eleven inches in length. The beak is very large and strong, while the feet act as powerful sculls. The Auk is black on the upper parts, and white on the lower; the upper portion of the neck is brownish, and there are two white spots on either side of the forehead. With these words we may consider the exterior of this curious creature to be fully described; of its habits of life but little is known.

The Great Auk is just as much a child of the ocean as the Stormy Petrel, though, as far as regards any other resemblance, the two birds are as far as the poles asunder; for the Petrel is a bird in every sense of the word, while the Great Auk is but a miserable link between fish and fowl; the first is free, and able to lord it over the billows, while the second is but a slave of the sea.

The home of this immature bird may be considered to lie between 60° to 80° of north latitude: thus Iceland and Greenland are stated to be the principal localities where it lives; whereas at Spitzbergen, as well as on the inhospitable northern coasts of America and Asia, it has been just as little noticed. In olden times the Great Auk was met with far more to the southward: it is said to have bred regularly on St. Kilda, and occasionally on the Faroe Islands, but it has never revisited these islands of late years. In 1813 the crew of a vessel, sailing between Faroe and Iceland, came upon a flock of these birds on the south side of the island, which is to this day called, after the Great Auk, "Geirfuglkjär" (Icelandic, *Geirfugl*): there they found a colony of twenty of these birds, and, landing in a boat, caught them all on their eggs, and brought them to Reykjavik, where they stuffed some and ate the remainder. The following year eight of these birds were seen on the western side of the island; these were likewise all killed, except one; and in subsequent years occasional specimens were shot. In 1844, however, the two last remaining birds in that locality were captured; and in 1852 a dead bird was, according to reliable information, picked up in Trinity Bay. Since that the Great Auk has neither been brought to us nor seen again, although a good reward has been promised to the captains of all vessels sailing to the north for every specimen they might capture. The Great Auk may be said to be extinct,—never to be found again.

Still we will not quite give up the hope that solitary individuals of this species have as yet escaped the clutches of destructive humanity, and are, therefore, still alive. This bird is entirely a sea-bird, only forsaking the flood when tired and weakened by heavy storms or drift ice. At such times it seeks groups of jagged rocks or isolated crags, surrounded by a boiling surf, so heavy as to defy the approach of man. These it ascends with great difficulty, shoving itself along horizontally, aided by beak and wings: out of the water the Auk is an unhappy creature,—chained to one spot. When sitting it rests on the entire length of the feet and the stump of a tail. Its mode of progression on land can scarcely be termed walking, although it manages to shuffle forward after a fashion.

Its movements in the water are the very reverse of its gait ashore, for in swimming and diving the Penguin alone can match it. The heaviest swell does not in the least disturb its equanimity, while it darts like an arrow boldly through the surf. It plunges unconcernedly from the rocks into the most raging sea. It is only under the water in the depths below that it feels itself at home: here the short wings are used as fins, and the powerful legs and feet as oars and helm. It can dive to a great depth, and, being able to hold its breath for a long time, manages to fish or forage successfully amongst the deep-lying mussel beds. Fishes seem to form its principal food, and are either caught swimming, or taken from off the rocks to which they adhere. It is said that the Great Auk is able to swallow, whole, fish the size of herrings; and it can probably manage to catch and devour fish of still larger dimensions. It is rare that its prey escapes. This bird can swim faster under water than on the surface, and is able to vie with any fish, as far as activity is concerned.

According to all accounts which we have of this bird, it is perfectly well aware of its helpless and forlorn condition when on land. The Great Auk is not exactly shy, but timid, and, following an innate impulse, avoids man as much as possible. If surprised by him on its resting place it loses all presence of mind, and does not know how to help itself in the least; and, as soon as its retreat is cut off from the sea, it quietly allows itself to be seized upon, or knocked down with a stick: it will, as an early observer states, even permit itself to be driven before one, like a sheep to the slaughter-house. When laid hold of it defends itself by biting: this mode of defence is useless, however, when man is the aggressor; though the bite, it is said, is sometimes productive of a rather severe wound.

It would seem that the Great Auk is not fond of the company of other rock-fowl, but leads a solitary life, consorting only with those of its own species during breeding time. As yet this bird has never been found breeding anywhere but on small islands standing mid-ocean, far away from the bustle of human life. These islands are, owing to the heavy surf by which they are surrounded, safe from intrusive visitors. Here the females deposit their single, and most curious egg: this latter equals, or even surpasses, that of the Swan in size, but looks thicker; it is pear-shaped, with a strong, coarse-grained shell, devoid of polish; the ground colour is white, spotted with indistinct gray, brown, blackish gray, and blackish brown; the spots are usually few in number, and not close together. Both male and female take part in the duties of incubation: this may be gathered from both sexes being found during the breeding season minus the feathers on the belly; and it is probable that the germ in the egg is not quickened under five weeks' incubation. It has hitherto been impossible to gather information as to the manner in which the newly-hatched young are fed and brought up, though it is reasonable to suppose that they are led to the sea soon after they are hatched, and there fed and cared for by their respective parents: at all events, a youngster, apparently scarce three days' old, has been seen swimming in the sea, near the old birds, with such ease and confidence as to lead one to suppose that all was managed according to the usual method in these cases. Besides this, very young birds were never found at the nesting places; and it would, most probably, be much too onerous a business for the old birds to clamber up several times during the day to feed their offspring. Still we know nothing certain about the breeding habits of these birds. It has been difficult as yet for the naturalist to observe the habits and ways of the Great Auk. All observations hitherto made have been by unscientific individuals.

We are greatly in the dark as to the natural history of this bird. Its battles and struggles with the world are, and probably will remain, ever unknown to us. Whatever we may know of the life and habits of other living members of the creation, with the Great Auk all our science is of no avail.

THE END.

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6	27	thorax	sternum
35	20	*camelis*	*camelus*
40	8	*Hoplopterus spinosa*	*Hoplopterus spinosus*
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100	30	Greater Tit	Great Tit
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128	6	Friessnilzer	Friessnitzer
136	20	shaffen	schaffen
136	22	wogen	wagen
165	5	üder	öder
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183	6	,, *S. curruca*	
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189	8	*Eurylæmus*	*Eurylaimus*
193	32	*delete* and	
194	20	Bee-eater	Bee-eaters
200	7	*Synallaxis*	*Synalaxis*
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505	3	as a kingdom	as forming a kingdom
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