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A

D I S C O U R S E

ON THE

Emigration of British Birds.

[PRICE ONE SHILLING.]



A
D I S C O U R S E
 O N T H E
Emigration of British Birds:

O R,
 This **QUESTION** at last **SOLV'D:**

Whence come the **STORK** and the **TURTLE**, the
CRANE and the **SWALLOW**, when they know
 and observe the appointed Time of their coming?

C O N T A I N I N G

A curious, particular, and circumstantial **ACCOUNT** of the
 respective Retreats of all those

B I R D S of **P A S S A G E**

Which visit our Island at the Commencement of **SPRING**, and
 depart at the Approach of **WINTER**; as, the

CUCKOW, TURTLE, STORK, CRANE, QUAIL, GOAT-SUCKER,	The SWALLOW TRIBE, NIGHTINGALE, BLACK-CAP, WHEAT-EAR, STONE-CHAT,	WHIN-CHAT, WILLOW-WREN, WHITE-THROAT, ETOTOLI, FLY-CATCHER, <i>&c. &c.</i>
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A L S O,

A copious, entertaining, and satisfactory Relation of
WINTER BIRDS of **PASSAGE,**

Among which are the

WOODCOCK, SNIPE,	FIELDFARE, RED-WING,	ROYSTON CROW, DOTTEREL, &c.
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S H E W I N G

The different Countries to which they retire, the Places where they
 breed, and how they perform their Annual Emigrations, &c.

With a short Account of those **BIRDS** that migrate occasionally,
 or only shift their Quarters at certain Seasons of the Year.

To which are added,

REFLECTIONS on that truly admirable and wonderful
 Instinct, the **ANNUAL MIGRATION** of **BIRDS!**

By a NATURALIST.

S A L I S B U R Y:

Printed and sold by **COLLINS** and **JOHNSON,**
 For the **AUTHOR.**

Sold also by **FIELDING** and **WALKER**, in Pater-noster Row, London.

M DCC LXXX.



T H E

I N T R O D U C T I O N .

THE migration of birds is a topic so curious, interesting, and important, that we cannot but recommend it to every student of Nature, and particularly to those whose inclination may lead them to that most useful and delightful province of natural history, called Ornithology. Such an investigation, we presume, is well worthy their attention and labour, and as it is inseparable with the subject, we think it a duty incumbent on them. They should be diligent and indefatigable to set the matter in a clear light. They should endeavour to assign the reason why some birds annually forsake us at particular seasons, and make their regular returns; also, why some prefer certain places for their summer, and others for their winter residence.

But this subject, curious and advantageous as it is, has hitherto been too much neglected. Very few authors of reputation have taken the pains to investigate it as they ought. Naturalists, in general, are silent on this head, or very superficially consider it. Almost all other topics, whether frivolous or important, useful or not useful, have claimed their regard, and been so frequently

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quently discussed by such a multiplicity of writers, that they are quite exhausted, and dwindle into tautology. This is not the case with the subject now under consideration; the migration of birds has been too much unnoticed—has not enough been consulted, in this age especially, when every species of writing is patronized, and the delightful study of natural history particularly encouraged.

When every other science that we can enumerate, or that can be thought of, has been so often, so universally written on, we think it a matter of surprize that the emigration of the feathered tribe, a wonder in nature we annually see renewed, should escape the observation of the curious, and remain so long neglected, unthought of, unnoticed, unexplored. It is greatly to be lamented that none of our countrymen, except two northern naturalists, Mr. Klein, and Mr. Echmark, have professedly treated on the migration of birds. The southern parts of Europe, where the majority of our summer emigrants spend the dreary season, or at least steer their course that way in their passage to remoter climes, has as yet produced nothing material to assist the enquiries of the naturalist. This is wonderful indeed! Surely incuriosity and inattention peculiarly distinguish those countries. We cannot, however, forget to pay our most grateful acknowledgments to two persons in particular, who have discussed this subject as far as it related to rural oeconomy, and in such a manner as is worthy of applause, and does honour to their respective

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spective countries. Mr. Alexander Mal' Berger, and Mr. Stillingfleet, are the gentlemen we mean.

A comparative view of the remarks and observations of former writers, would be of infinite service to us; they would not only elucidate, but help our conjectures, and give us great insight into the subject. New observations and new discoveries may be made in one age, that are not in another, by the hints that one generation transmits to another. Human reason is still aiming at perfection. What is only begun in one generation, is often completed in a succeeding. Many important affairs, many things of infinite consequence to mankind, which are now but imperfectly known, and of which we have only a superficial knowledge, may possibly, hereafter, be thoroughly understood. *Ita res accendunt lumina rebus.*

That all manner of sciences have improved, and are still improving, is a truth too obvious to be disputed. *Senescente mundo adolescunt ingenia;* the older the world, the wiser. The knowledge and experience of our predecessors are undoubtedly advantageous * to us. Many good, many valuable things are to be found in the works of the ancients. These are very serviceable to us in our studies, and throw light upon the respec-

* A certain author very justly remarks, that we do not owe the tenth part of what we understand to the force of our own reason; but we collect it either by perusing the labours of the dead, or by borrowing of the living, as they did of others. Almost all human knowledge descends, as it were, by lineage. The whole round of science proceeds discursively, and by a kind of gradation.

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tive subjects they treat of. Apparent it is, that the ancients were too credulous, were apt to deal in fiction, and amassed every thing that came in their way, without lopping off the superfluities. We must not, however, for such a failing, without any discrimination, condemn their labours; or on that account think them unworthy of our attention: No,—we ought rather to thank them for their knowledge and researches, their industry and erudition, bequeathed to posterity for the benefit of succeeding ages.

But to resume,—we allow that a proper, complete, and satisfactory discussion of the subject we are recommending to the attention and consideration of the naturalists, is an arduous and difficult undertaking. But this should by no means discourage or intimidate us. The curiosity, the pleasure, the advantage, and novelty of a consummate investigation, will fully compensate us for the trouble. In the execution of any individual thing, is not some application and industry on our part necessary? Let us then stimulate our intellectual faculties, and exert our mental powers; let us bestow some pains to solve this question—a question which has long remained involved in darkness—a question which has been inscrutable for ages.—Whence come the stork and the turtle, the crane, &c.

To be sufficiently qualified for this task, it is necessary that the inquirer should confine himself to one certain tract the whole year; he should be particularly careful to mark the exact period of the arrival and disappearance of birds; he should observe

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observe in what order the different species come, and at what time, and in what manner they go; also how they steer their course, whether east, west, north, or south; he should commit every observation to paper, and compare them with the remarks of others who have written on the subject; he should likewise attend to the temperament of the air, and to the plenty or failure of fruits and berries, as on these accidents many curious and advantageous remarks may be made; he should cultivate an acquaintance with the gentlemen of the navy, consult their journals to discover what birds alight on the ships, and at the same time should endeavour to learn at what seasons they appeared, in what latitude, &c. Were these methods vigorously and strenuously pursued, we might easily trace them to their respective abodes.

Such then has been our attempt; we have filled volumes with remarks; have strictly observed, for a long term of years, the particular, the exact time each species appear and disappear; the way they steer when they quit this island; and from what quarter they arrive when they visit us again. We have registered these remarks, compared them with the observations of others, examined the journals of seamen, collected the relations of travellers, and made every other information that was in our power, in order to arrive at a *perfect* knowledge of this subject.

The method we have taken in considering the migration of birds, we presume, will be found

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to be a judicious one. The works of others are first attended to; their remarks, observations, conjectures, and opinions, are laid open to the reader; when erroneous, they are confuted, not by speculative, but experimental reasoning; when consistent and probable, coinciding with our own sentiments, they are embraced; and if they strengthen, elucidate, or any way confirm our assertions, we have thought proper to incorporate them, sensible that a variety of proofs will establish our opinion, and render it quite incontrovertible. Having consulted every author, both ancient and modern, that has written on this curious particular of birds; having considered their different conjectures, and nicely weighed their respective arguments in the balance of justice, in the unerring and impartial scale of truth; and at the same time having added to all this an ample sum of reiterated observation and experience, considered the subject in all its circumstances, compared and re-compared it, we have at last unveiled the grand mystery, dispersed the gloomy shades of ignorance, and brought to light a secret, which has remained hid in obscurity for a long succession of ages.

But we have already exceeded the limits of an introduction, and can only add, that no diligence or labour has been wanting on our part, to render this discourse interesting and entertaining to the curious in general, as well as useful and satisfactory to the most inquisitive reader. We have endeavoured to make it as methodical as possible. Our summer visitants are first copiously and

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and distinctly treated of. Winter birds of passage are next particularly considered, together with wandering emigrants, or those that do not totally remove from our island. The reflections on the migration of birds at the conclusion, we presume, will not be unacceptable to the reader.

*Market-Lavington, Wilts,
February 21, 1780.*

E R R A T A.

- Page 9, last Line, read v. 2, p. 169.
10, Line 6, read monstrous.
11, — 22, read Buffon.
19, — 6, read where.
22, — 23, read etotoli.
27, — 15, read do.
34, — 22, read who were.
42, — 23, read immense.

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A

DISCOURSE

ON THE

Emigration of British Birds:

O R,

This Question at last Solv'd,

Whence come the Stork, and the Turtle, the Crane,
and the Swallow; when they know, and observe,
the appointed Time of their coming?

Of SUMMER BIRDS of PASSAGE.

AS our little migratory summer visitants are most numerous, and the most remarkable for their regular annual appearance; as they have in every clime, and every country, more attracted the notice of mankind,—we think proper to begin with them; and first of the *Swallow tribes*.

Before we offer to the reader's consideration our *own opinion*, concerning the manner these, and other summer birds of passage, dispose of themselves in the bleak and gloomy season, we shall, pursuant to our proposal in the introduction, lay before him the many chimerical notions, the many groundless conjectures, the many foolish, unreasonable, impertinent, and incongruous

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Hypo-

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hypothesises, which have, from time to time, been advanced * on this topic. We shall not only mention the tales which superstition has raised, or credulity received, but also the sentiments and observations of substantial creditable authors; particularly of those learned naturalists, whose works are an honour to themselves, and a treasure to the British nation.

Among naturalists there are *four* opinions how these birds encounter the winter. The first is supported by great antiquity, which is, that they hide themselves in hollow trees, in caverns of rocks, in sand pits, in old buildings, under the earth, &c. Here they are supposed to continue in a torpid state; have no sensible evacuations; breathe little, or not at all; and most of the viscera cease from their functions. In this condition they are said to remain, till, by length of time maturing the process, or by new heats, the fluids are attenuated, the solids are stimulated, and the functions begin where they left off.

Aristotle and Pliny are strenuous advocates for this conjecture; their accounts, though not invariably the same, almost entirely coincide. They assert that swallows do not remove to warmer climes, but either retreat into sand banks, or winter in the hollows of rocks, and lose their plumage during that period. Many reputable naturalists have adopted the former part of their opinion, and pretend to affirm that some species have been discovered in a torpid state. Thus one in particular delivers it as a fact, that heaps of swallows have been found lying in the cliffs of the rocks that impend over the sea: it is also said, these birds have been discovered in the chalky clefts of Suffolk, at the fall of

* We beg to be excused for introducing a legion of inconsistent fables, which, in merit, are hardly worthy perusal. Our intention here, is not to convince by argumentative proofs; but only to amuse and entertain the reader, by reciting, and exploding the variety of laughable suppositions and glaring errors, which have from time to time appeared. Indeed, I am no advocate for burlesque, but I cannot repress the humourous passion on such a ludicrous occasion.

a great

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a great fragment some time since. In many other places, (Mr. Pennant saith) they have been found, but I will not vouch for the truth of it; as first, in a decayed hollow tree, that was cut down near Dolgelie, in Merionethshire; secondly, in a cliff near Whitby in Yorkshire, where, in digging out a fox, whole bushels of swallows were found in a torpid condition; thirdly, in an old lead mine, in Flintshire, vast numbers of swallows, it is said, were seen clinging to the timber of the shafts, seemingly asleep; * on flinging some gravel on them, they just moved, but never attempted to fly, or change their situation. Klein also gives an instance of swifts being found in a torpid state.†

The following account of some swallows on the Rhine, was communicated to Mr. Peter Collinson, by Mr. Achard, and was read before the Royal Society, the twenty-first of April, 1763.

“ In the latter end of March,” says he, “ I took my
“ passage down the Rhine, to Rotterdam. A little
“ below Basil, the south bank of the river was very
“ high and steep, of a sandy soil, sixty or eighty feet
“ above the water.

* Mr. Pennant, to whom this account was transmitted, thinks there is a partial migration of these birds; he is of opinion, that the majority of them remove to distant countries, and that the feeble, late hatches, conceal themselves in this island all the winter.

He endeavours to strengthen this supposition by arguments very unphilosophical, and not at all satisfactory.—If it should (saith this writer) be demanded, why swallows alone are found in a torpid state, and not the other many species of soft billed birds, which disappear about the same time, the following reasons may be assigned: no birds are so much on wing as swallows; none fly with such swiftness and rapidity; none are obliged to such sudden and various evolutions in their flight; none are at such pains to take their prey; none exert their voice more incessantly; all these occasion a vast expence of strength and spirits, and may give such a texture to the blood, as other animals cannot experience; and so dispose, or we may say, necessitate this tribe of birds, or part of them at least, to a repose more lasting than that of any other. *British Zoology.*

† Hist. Av. 204.

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“ I was surprized at seeing, near the top of the cliff, some boys tied to ropes, hanging down, doing something. The singularity of these adventurous boys, and the business they so daringly attempted, made us stop our navigation, to enquire into the meaning of it. The watermen told us, they were searching the holes in the cliffs for swallows, or martins, which took refuge in them, and remained there all the winter, until warm weather, and then they came abroad.

“ The boys being let down by their comrades to the holes, put in a long rammer, with a screw at the end, such as is used to unload guns, and, twisting it about, drew out the birds. For a trifle I procured some of them. When I first had them, they seemed stiff and lifeless; I put one of them in my bosom, between my skin and shirt, and laid another on a board, the sun shining full and warm upon it; and one or two of my companions did the like.

“ That in my bosom revived in about a quarter of an hour; feeling it move, I took it out to look at it, and saw it stretch itself upon my hand; but perceiving it not sufficiently come to itself, I put it in again; in about another quarter, feeling it flutter pretty briskly, I took it out, and admired it. Being now perfectly recovered, before I was aware, it took flight; the covering of the boat prevented my seeing where it went. The bird on the board, though exposed to a full sun, yet I presume, from a chilness of the air, did not revive so as to be able to fly.”

Such is this gentleman's account, on which the following observations were made by Mr. Collinson :

“ What I collect from Mr. Achard's relation, is, that it was the practice of the boys annually to take these birds, by their apparatus, and ready method of doing it; and, the frequency of it was no remarkable thing to the watermen; next, it confirmed my former sentiments, that some of this swallow tribe go away, and some stay behind, in these dormitories,

“ all

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“all the winter. If my friend had been particular as to the species, it would have settled that point.”

Notwithstanding the authority of Aristotle, Pliny, Klein, Pennant, Achard, and others, we *cannot assent* to the above circumstances, viz. that swallows lie torpid in caverns of rocks, hollow trees, &c. The innumerable testimonies of an opposite nature, which continually croud in upon us, sufficiently convince us that this conjecture, which so many have adhered to, and which has so long been maintained, is in reality only a *superstitious error*. The internal conformation of swallows, is a *proof* that they cannot remain dormant during the winter. Anatomists inform us, that all those animals which are designed by nature for a temporary torpidity, have something in their make different from others, to fit them for that condition, and enable them to remain so long a time without sustenance. This is not the case with any of our summer emigrants, as has been proved by experiment.*

The birds seen by Mr. Achard, at the latter end of March, we presume, were only *sand-martins*, which are a species that arrive very early in this country, and at their first coming, always repair to the sand banks, &c. where they continue the whole summer. Possibly they were scooping out their respective apartments to breed, and nestle in, when they were taken by the boys, and instead of being benumbed by the cold, as was imagined, might only be hurt by the cruel method of drawing them out of the holes.†

We

* See page 11.

† As this occurrence, which Mr. Achard relates, happened at the latter end of March, it is pretty obvious the species seen at that time were sand-martins. For at this period, (unless the spring proves remarkably backward) the greater part of this tribe have reached our island. Swallows, house-martins, and sometimes swifts, are seen in our country, flying about the air in great numbers, at the latter end of March; and frequently the majority of these birds, as well as the rest of our summer guests, are arrived at that time. Undoubtedly, therefore, the species observed

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We do not deny but that there are undeniable instances of a few being found in a dormant state, at the *beginning* of winter; but in all probability they were only *stragglers*, which were hatched *too late* to join in the general emigration. Incapable of assembling with the great rendezvous, like bats at the commencement of the frigid season, these young birds flit, and wander about, 'till pinched by the cold inclement air, for a transient shelter, they retreat into antique buildings, hollow trees, under the eaves of houses, &c. or find their way into some obscure recess, where they continue motionless, insensible, and rigid for several days, or perhaps weeks, before they expire. Often these unfortunate stragglers are reanimated by an unseasonable hot day, leave their hiding places, and are seen *skimming* the air in pursuit of flies. So late as the middle of November, which is full a month after the departure of the majority of the tribe, I have frequently observed a straggler or two, either perched in the sun, fluttering about wildly from place to place, or feebly sweeping the atmosphere for food. Extraordinary as it may appear, on the 3d of December, 1771, I saw a martin flying about as vigorously as though it had been in the midst of summer. My curiosity was greatly excited at this remarkable phœno-

menon. served by this gentleman was the same as we have conjectured above. But we will suppose, did swallows *actually* lie torpid during the winter, the genial season would certainly have called them abroad before the latter end of March, and it would be very extraordinary to find a single one wrapt up, sleeping in its winter dormitory, so late in the season. What then can be more plain, but that our assertion, in contradistinction to that of Mr. Achard's, is right, is just? Beside, as a farther demonstration of the truth of what we have advanced, I have frequently seen near my residence, (a) sand-martins drawn out of lofty sand banks by boys, as early in the season, and with the same apparatus, as that described by Mr. Achard. The birds taken in this manner were undoubtedly retired to those recesses for the purposes of building; and I cannot entertain that wild, that ridiculous notion, that they had lain there all the winter.

(a) i. e. At Market-Lavington, in Wiltshire.

menon.

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menon.* For a considerable while I was unable to account for it, and could not imagine from whence it came, or how it could preserve itself so long. To say it remained torpid for upwards of two months, would be talking extravagantly and inadvertently; or to assert, that it had taken its long excursion over the ocean from a remote clime, would be equally as unreasonable and unphilosophical. Having since maturely and deeply considered this occurrence, I believe I have at last attained the genuine solution, which is,—that it was a bird bred here, and being left behind at the migration of the rest, made a shift to support itself in our country for a considerable time. This is still the more probable, as the two months preceding had been uncommonly mild and warm. With propriety, therefore, we may reasonably suppose, that there were then some insects to be found flying in the air; this granted, there is nothing wonderful or surprising in the affair.

The appearance of swallows and martins at unseasonable times are frequent.† Mr. Pennant mentions

* Having then made no researches in natural history, and being quite a novice in ornithology, I must confess I was inclined to believe that martins, swallows, &c. laid motionless all the winter; but now innumerable evidences of an opposite nature convince me of the contrary

† Not only swallows, but many other species, which are denominated birds of passage, are not only seen here occasionally, but are known to continue in this country all the winter. A few of the stone-chats and whin-chats (the greater part of which tribe disappear in autumn) remain on our heaths and commons all the year round. The reason of this is not certainly known. Perhaps the few that stay behind are the produce of a late breed, and are incapable of departing with the rest of their feathered mates. How they support themselves during the dreary season we cannot pretend to determine; probably they pick a scanty subsistence from the places where they haunt, by feeding on gnats and other minute insects, which glide about the air all the winter; or it is not impossible but they may change their usual repast, when necessitated by nature.

Some

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tions several instances of a similar kind. Very near Christmas (saith this author) a few appeared on the moulding of a window of Merton College, Oxford, in a remarkable warm nook. On the twenty-third of October, 1767, a martin was seen in Southwark, flying in and out of its nest; and on the twenty-ninth of the same month four or five swallows were observed hovering round, and settling on the county hospital at Oxford. As these birds must be of a later hatch, Mr. Pennant very justly observes, 'tis highly improbable that, at so late a season of the year, they would attempt, from one of our midland counties, a voyage almost as far as the equator or Senegal.

We proceed now to consider the *second* opinion of naturalists, with respect to the migration of swallows; &c. and hope to convince the reader of its improbability and absurdity, by cogent and undeniable arguments.

Amazing and unnatural as it may appear, it has been affirmed by many, that swallows pass the winter immersed under ice at the bottom of lakes, or beneath the water of the sea. The first who propagated this most absurd and ridiculous notion was Olaus Magnus, Archbishop of Upsal, who very seriously acquaints us, that they are frequently found in clustered masses at the bottom of the northern lakes, mouth to mouth, wing to wing, foot to foot, and that they assemble together for this purpose, and creep down the reeds in autumn to their subaqueous recesses. That when old fishermen discover such a mass, they throw

Some of those birds, which visit us at the approach of winter, are also observed to stay with us the summer season, though the majority of the same species constantly and regularly remove. The woodcock and snipe, for instance, sometimes continue with us during summer, and even breed with us, making their nests as well on the highest mountains, as in our low moors and marshes. Fieldfares, it is reported, have been also seen here in the midst of summer; and a certain author relates, that he has found the young of the latter in marshes, and among sedge, near the water.

it

It again into the water; but when young inexperienced ones take it, they will, by thawing the birds at a fire, bring them indeed to the use of their wings, which will continue but a very short time, being owing to a premature and forced revival.*

Olaus Magnus further adds, that a large cluster of swallows being accidentally carried by some boys into a stove, the swallows, after thawing, began to fly about, but weakly, and for a very little time.

'Tis obvious the good Archbishop did not want credulity in other instances, for having stocked the bottoms of lakes with birds, he stores the clouds with mice, which sometimes fall in plentiful showers in Norway; and the adjacent countries.†

* There are more accounts (*a*) of swallows being found in a benumbed state, immersed under water; but as they are too notorious, and incredible, to merit our attention, we shall pass them over unnoticed. We will, however, merely for the entertainment of the reader, just mention a few.

Etmuller relates, that he himself had discovered above a bushel of swallows under the ice in a fish pond, all dead to appearance; but the heart still retaining its pulsation. To the same purpose, Dr. Cotas, speaking of their manner of fishing in the northern parts, by breaking holes, and drawing their nets under the ice, saith, that he saw sixteen swallows drawn out of the lake of *Samrodt*, and about thirty out of the King's great pond in *Resincilen*; also at *Schlebitten*, near an house of the earl of Dobna, he saw two swallows just come out of the water, that could scarce stand, being very wet and weak, with their wings hanging on the ground; and that he hath observed the swallows to be often weak for some days after their appearance. (*b*)

Agreeably to this, Mr. Rheumur received several accounts, that bundles of swallows have been found in quarries, and under the water; and he was promised ocular demonstration, but none of his correspondents kept their words. (*c*)

Another author informs us, that he has taken them out of the bottoms of rivers, ponds, lakes, &c. in great quantities, where they pass the winter without motion, and have no perceptible signs of life, except the beating of the heart.

† Gesner. Icon. An. 100.

(*a*) Derham's Phys. Theol. 349. Pentoppidan's Hist. of Norway, 1, 99. Etmuller Dissert. 2, cap. 10, sect. 5.

(*b*) Derham's Phys. Theol. 350.

(*c*) Brookes's Nat. Hist. b. 2, p. 169.

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Inconsistent as it may appear to a serious and considerate reader; unnatural and unreasonable as the supposition is, credit has actually been given to the *submersion* of swallows, even by our own countrymen. What superstitious presumption! Erroneous assertion indeed! How incompatible with reason!—how monstrous to thought!—We cannot think on it without smiling at the folly, at the simplicity of the authors.

Mr. Klein, who in other instances cannot be accused of easy credulity, is a dupe to this notion, and strongly patronizes this doctrine. How he came to adopt this most preposterous of all errors, we cannot imagine. He relates the following history of the swallows retiring, which he received from some countrymen, and others. They asserted, that the birds assembled in numbers on a reed, till it broke, and sunk with them to the bottom; and before their immersion, they had a dirge of a quarter of an hour's length. That others would unite in laying hold of a straw with their bills, and so plunge down in society. Others again would form a large mass by clinging together with their feet, and in that manner commit themselves to the deep.*

Though these accounts have been countenanced, confirmed, and established by such a group of eminent naturalists and others, there appears not the smallest truth in them. Indeed, they are so absurd, so exceedingly absurd, that they are hardly worthy confutation. Can it be possible that such tender and delicate birds, who are unable to bear the inclemency of our mildest winters, should immerse themselves in the coldest of all elements, and remain there so long a period without perishing? Can it be possible for them to metamorphize themselves, as it were, into amphibious animals, and alternately change their element, as best suits their constitutions?

Surely the water must be too frigid and too unnatural a retreat for such summer birds; and we are inclined to believe, that should they have no occasion for
breath

* Klein's Hist. Av. 205, 200.

breath in their subaqueous dormitories, yet in the spring, when the genial warmth begins to call them from their wintry tombs, their feathers would not be in a proper condition to lift them out of the water. Frisch has made an experiment, which strikes at the very foundation of this assertion, and evidently proves the falsity, the inconsistency of these relations. He informs us, that he has taken several swallows alive, tied marks to their claws, and then released them. When the same swallows returned again, he did not perceive the water had spoiled them: one of the criterions, or marks, was red thread, made so by a water colour only, which must needs have been washed off, if the swallow had hid itself under the water. Perhaps it may appear wonderful how he came to catch the same bird again; but we must consider that swallows always return to their old nests again,* and commonly build them in chimney tops.

It has been supposed, that in the swallow species, which have their winter residence under the water, the blood might lose its motion by the severity of the cold, and thus the birds become torpid; but Mr. Buffar, by placing many of this sort in an ice-house, discovered that the cold, by which their blood was congealed, was also fatal to them.

Some of the naturalists, conscious that this chimerical, this egregious hypothesis would not bear the test, started another conjecture, equally as erroneous and unlikely as the former, viz. Whether there may not be a species, apparently like the rest, but of a different internal conformation, in order to capacitate them for a state of insensibility during the rigour of the winter. A curious anatomist, therefore, dissected several of them, but found nothing in them different from other birds, as to the organs of respiration; and he saith, all those creatures that sleep during the dreary season, as bats, frogs, lizards, &c. are of a *contrary make* as to

* See page 21, where this is more fully demonstrated.

those organs; it is therefore (saith he) a wild opinion that these birds can remain any long time under water without drowning.

It is, indeed, enough to raise one's indignation, to see so many vouchers, so many candidates for this foolish and erroneous conjecture, which is not only repugnant to reason, but, according to the laws of nature, an absolute *impossibility*. In relating so many instances of unparalleled credulity, I confess I cannot suppress the irascible passion: That ever men of sense, men of genius, men of distinguished abilities, should suffer themselves to be so involved, so deeply involved in the dark mists of error and ignorance! They assign not the *smallest* reason to account for these birds being able to endure so long a submerision without being drowned, or suffocated. Not the smallest reason is given how they preserve themselves,* or remain without decaying, in such a cold and turbulent element, which must be very unnatural to so weak and delicate a bird.

Having sufficiently shewed the absurdity of a notion, which has long been countenanced and supported, we come now to consider the *third* opinion of authors, which has been advanced on this topic, and in this we shall be very concise.

About the year 1740, a pamphlet on the emigration of birds appeared, asserting that they fly to the moon, or some other planet, where they take up their abode during winter, and return from those aerial habitations again in the spring. The author of the rhapsody has taken infinite pains to confirm this strange and novel

* On supposition we did admit that swallows, &c. do retire under the water, in seas, rivers, ponds, lakes, and the like, I cannot see how they can easily escape the ravages of aquatic animals, and other finny inhabitants of that element. Certainly if the voracious creatures of the deep should discover their lurking places, (as no doubt but sometimes they would) they would fall to, and destroy them without mercy. The dangers which these birds would be exposed to under the water, where their enemies swarm in immense numbers, are so many, and so great, that not *one tenth part* of them would ever be able to escape.

supposition;

supposition; he thinks that they are about two months passing thither, and that after they are arrived above the lower region of the air, into the thin æther, they will have no occasion for food, as it will not be so apt to prey upon the spirits, as our lower nitrous air. Even in this *terrene*, saith this author, bears will live upon their fat all the winter, without any new supply of food; and perhaps, saith he, these birds, being very succulent and sanguine, may have their provisions laid up in their very bodies for their voyage.

And 'tis very probable (saith this author) that they are in a kind of sleep, or state of insensibility, if not all, a great part of the way, between the attraction of the earth and that of the moon, to which sleep the swift acquired motion may very much contribute.

Farther, he observes, that if it can be proved these birds do not fly to the moon, who can tell but that there may be some concrete bodies, at much less distance than that opaque planet, which in all probability may be the recess of these creatures, and may serve but for little else than their entertainment? If there be such ætherial islands, they must be supposed of such magnitude only, and at such a distance, as their reflective light may not reach our earth, (though perhaps they may serve to illuminate our atmosphere) and yet no farther off but these birds may arrive unto them in due time.*

This notion of flying to the moon, &c. is, I think, too extravagant to require any confutation. The moon, as Mr. Jonson, in a letter to Mr. Ray, very justly remarks, is too far a journey for these birds.† 'Tis equally ridiculous to suppose, as a celebrated writer has done, that they soar above the atmosphere in their passage to distant countries; for these feathered nations would die inevitably, if removed beyond the mass of air that surrounds the earth, for want of that uniform pressure

* See an essay on the emigration of birds, by an anonymous author, p. 42, and 47.

† Ray's Letters, p. 198.

which

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which is the spring of internal motion in the animal machine. This is rendered demonstrable from reason and experiment, on animals in the exhausted receiver.

Upon the whole, the fourth opinion of naturalists, which we are now going to enter upon, coincides exactly with our own sentiments, and has the utmost appearance of probability; which is, that they *remove to warmer climates*, where they meet with a supply of food, and a temperature of air, adapted to their constitutions.

This notion of swallows emigrating to distant climes, has been frequently imperfectly hinted, but never satisfactorily proved. By our own observations and experiments, combined with authors of the greatest veracity, we flatter ourselves to render this supposition quite incontestable.

That every species of swallows remove at the commencement of winter into warmer countries, is no longer to be disputed, as we can convince the reader by innumerable and undeniable proofs. Previous to their departure, it is well known that they assemble in great numbers on the tops of towers, churches, trees, chimnies, &c. Here they will continue twittering for several hours together, as if in consultation. On a sudden they will all fly off, take an ample circuit in the atmosphere, and after a flight of a few minutes rest again. This they repeat daily, when the weather is serene and warm, a month or six weeks before their departure. These transient diurnal excursions, which are so often renewed, are probably designed to exercise their young, and prepare them for the long aerial journey, which in a little time they are to attempt; or possibly these occasional essays may be made by the majority, in order to remind them of their voyage, and to capacitate them to fly with more facility over the wide Atlantic ocean, to their winter residence; which, I suppose, cannot be less than three or four thousand miles distant.

Having

Having called an assembly, and concerted measures, as soon as the cold commences,* and those swarms of insects disappear, which a little while ago filled the air; apprized of the gloomy season, they wait a favourable gale, and then unanimously take their long and arduous voyage † through the liquid sky.

As a farther proof, these birds are annually observed to fly over the seas, in numbers immense. What darkening clouds of them do the mariners frequently see, sweeping over the wide capacious ocean! Often, through fatigue and weariness, they alight in myriads

* When the solar heat apparently declines; when the days shorten, and chilling frosts appear, these concomitants of approaching winter are so many signals to these birds to leave our climate, and search for one more agreeable to them; beside, by these accidents being also stinted in their food, they are necessitated to depart. The generality of this tribe seldom forsake us till toward the middle of October, and sometimes not till after that period. They usually appear about the middle of April; indeed, in some seasons, by the beginning of that month; nay, there are instances of their being seen by the middle of March.

† That master of bold description and beautiful painting, Mr. Thomson, has given us, in his *Seasons*, the following account of the departure of the swallow tribes, which we presume will not be disagreeable to the reader.

When autumn scatters his departing gleams,
Warn'd of approaching winter, gather'd, play
The swallow people; and tofs'd wide around,
O'er the calm sky, in convulsion swift,
The feather'd eddy floats: rejoicing once,
Ere to their wintry slumbers they retire;
In clusters clung, beneath the mouldering bank,
And where unpierc'd by frost the cavern sweats;
Or rather into warmer climes convey'd,
With other kindred birds of season; there
They twitter chearful, till the vernal months
Invite them welcome back; for thronging, now
Innumerable wings are in commotion all.

AUTUMN, l. 835, &c.

We are happy to have so able a poet, and so learned a man, as Mr. Thomson, on our side. His authority, with respect to the migration of summer birds of passage, and their passing to warmer climes, is, we think, no contemptible evidence.

on

on the ships,* and after a transient repose, urge their flight again toward the destined port; where they arrive in due time; and remain in peace and plenty; till clement skies, and vernal suns, invite them back again.

Mr. Catesby, a very learned and ingenious naturalist; in speaking of the migration of swallows, seems to have treated the subject with a great deal of judgment.† The reports of those we call birds of passage lying torpid in caverns and hollow trees, this gentleman thinks are ill attested and absurd. He agrees with us in opinion, that these birds fly into other countries, with this additional conjecture, that the places they retire to, lie in the same latitude in the southern hemisphere, as those from whence they depart; where the seasons reverting, they enjoy the like temperature of air; but this we think is absolutely impossible, the distance being for the most part too great; nor is there necessity for such a long passage, since the countries on this side the line may answer the same purpose.

As to their manner of travelling, it is probable that swallows, whose wings, by their length and continual

* Agreeably to this, Sir Charles Wager gives the following account of what happened to him in one of his voyages. "Returning home," saith Sir Charles, "in the spring of the year, as I came into sounding in our channel, a great flock of swallows came and settled on all my rigging; every rope was covered; they hung on one another like a swarm of bees, the decks and carving were filled with them. They seemed almost famished and spent, and were only feathers and bones; but being recruited with a night's rest, took their flight in the morning. (a)

This very great fatigue evidently proves, that their journey must have been very long, considering the amazing swiftness of these birds; it is likely they had passed over the Atlantic ocean, and were returning from Senegal, or other parts of Africa.

We have innumerable other proofs of swallows being seen passing over the ocean; but they are too prolix to recite here. Those we have already mentioned are collected from the best authorities, and are so well attested that they cannot be denied.

† See Philosophi Transact. No. 483.

(a) Phil. Transf. vol. 2, part 2, p. 459.

exercise,

exercise, are fitted for long flights,* can stretch over wide seas, and perform their journey much sooner, and with more facility, than other small birds which have short wings, &c.

Mr. Willoughby is of opinion, that swallows go into hot countries, particularly to Egypt and Ethiopia; and indeed it is not improbable but some of them may spend their winter there, as at the time these birds quit Europe, the inundation of the Nile is over, and the marshes and stagnating waters swarm with flies of different species, which are proper food for swallows. During our winter, therefore, we may suppose some of them to stay in those countries, where every thing at that period is in its bloom and beauty, till scorching heats induce them to seek a milder climate, and fly from Africa to Europe.

Another reputable and very learned naturalist speaks to this purpose, which farther confirms our sentiments, that swallows *actually emigrate into warmer climes*.

It is (saith he) a most egregious notion indeed, to think, as many have done, that swallows and other summer birds sleep during winter in hollow trees, in sand pits, under the earth, &c. till, roused by the invigorating warmth of returning spring, they rise from their dormant state, and reassume again their gaiety. Most of the ancient naturalists, indeed, were of this opinion, and many of the moderns adhere to it; but it is easy to shew the absurdity of such a conjecture, and it is equally easy to demonstrate, that they absolutely leave this part of the world at the approach of winter, and fly in pursuit of a more temperate region. Doubtless if they hid themselves any where in this country, there would be *annual proofs* of it in almost every county

* In Kalm's voyage to America is a remarkable instance of the distant flight of swallows, for one lighted in the ship he was in, September the 2d, when he had passed over only two thirds of the Atlantic ocean. His passage was uncommonly quick; when this accident happened he was fourteen days sail from Cape Hinlopen.

in England. 'Tis true, it has been frequently asserted, that swallows have been found in a torpid state, both under the earth, and at the bottoms of rivers; but as there are no authentic and incontestable evidences, such reports are undeserving of our credit.

I cannot but think, (continues this naturalist) were they to reside here, but that some of this tribe would appear earlier than they do, especially when the spring is forward, and the weather warm. Nay, I cannot but think, were they to lie torpid, some of them would frequently be called abroad in the midst of winter on a fair day; but it is certain they are never seen * before their appointed time. Beside, I remarked this year, (1760) that we had the finest, mildest weather in February and March that ever was known; the spring was so exceedingly early, that the trees were clothed in green a month sooner than usual; the weather was also remarkably warm, which I think must needs have awakened the swallow tribes from their torpid inactivity, had they been in any part of our island. Warm, uncommonly warm as those months were, not one appeared till the middle of April;—a sufficient *proof* that they do not lay torpid in any part of Great-Britain, but *actually leave us* † at the approach of winter.

But to render this truth *quite indisputable*, to solve the matter fully, and prevent any farther controversies on this affair, we beg leave to observe, that we have more than once had ocular proof of what, with propriety, we may term, an actual migration of these birds. About old Michaelmas we have frequently observed immense numbers of swallows and martins settled

* This writer seems totally ignorant that stragglers are sometimes seen out of their season; as he asserts, that they are “never observed but at their appointed times.”—This, however, is no disparagement to the scope of his arguments, the rest of his sentiments being founded on truth.

† Mr. Adanson has proved beyond contradiction, that these summer birds annually take their flight to a warmer region, and return again in the same manner.

sometimes

Sometimes on the tops of trees, and sometimes on bushes, at a great distance from their summer haunts; here they have sat silent for some time, as if in deliberation; on a sudden we have seen them all take wing, mount to a certain height, and, with an easy regular motion, proceed toward the western ocean, when our eye has followed them till they were quite imperceptible; and what was very extraordinary, not a single one was to be found after the departure of the great assembly; which evidently testifies that what we observed was the *first sally*, or *setting out*, of these summer visitants. These annual proceedings we have remarked for a long series of years.*

The departure, and arrival of these birds, are remarkably *regular* with respect to the season, which any one may be convinced of, by annually taking notice of the exact time when they go and come. I find by my journal, that they appeared in Wiltshire on April 5,

* Similar to our account is that of Mr. White's.—Travelling one morning at the latter end of autumn, (saith this gentleman) between my house and coast, I was environed with a thick fog; but on a large wild heath the mist began to break, and I discovered a number of swallows clustered on the standing bushes, as if they had roosted there. As soon as the sun broke out, they were instantly on wing, and, with an easy and placid flight, proceeded toward the ocean. After this I saw no more flocks, but only now and then a straggler.

These autumnal meetings are very common in the swallow tribes, just about the time they depart. On the willows, about the little isles in the Thames, they are annually seen to assemble. We are informed, that on the 26th of September last, two gentlemen, who happened to be at Maidenhead-Bridge, furnished at least a proof of the numbers there assembled. They went with torches, about midnight, to a neighbouring isle, and in less than half an hour brought ashore fifty dozen. The branches of the trees were loaden with them in such a manner, that they had nothing more to do than to draw them through their hands, the birds never moving till they were secured. Some will, perhaps, assert that this rendezvous met for the purpose of plunging into subaqueous retreats; but was that the case, they could not escape discovery in a river constantly fished as the Thames: undoubtedly a speedy departure was their aim.

1774, and disappeared on the 9th of October. In 1775, they were seen April 3, and left us October the 14th. In 1776, on the 7th of the same month, and left us one day later than the preceding year. In 1777, they appeared on the 4th, and disappeared October the 13th. Next year they arrived on the 9th of April, and disappeared about two days later. In 1779, they were seen April the 10th, and left us on the 12th or 13th of October; so that in the space of five revolving seasons, the time of their arrival and disappearing agreed almost to a day. When they leave Europe, they always go off in vast flocks, and what is very remarkable, a straggler is scarce ever left behind. In the vernal season, they quit the warmer regions, and return in the same manner.

The different species of swallows do not go and come at the same time; the sand martin usually arrives first; about a week after the swallow is seen; a few days later, common martins come in great numbers, and disperse themselves all over Europe. Each species commonly come to us in companies, and are generally first seen after a rainy day.

Extraordinary as it may appear, 'tis certain that the swift constantly disappears about the middle of August. We cannot pretend to determine the cause why it leaves us so early; want of food cannot drive it from our climate, as insects are then very plentiful in our island; neither can the severity of the season compel it to quit this country, as the weather is usually very warm when it departs. Perhaps it may feed on a particular species of insects, which may be very common in the first summer months, and vanish in autumn. As swifts always fly high, it is probable these insects are found only in the upper regions of the air: it is also probable that their season is over, and they are no longer to be found after the middle of August; if so, as nothing is more likely, the cause of their early migration is very evident.

'Tis

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'Tis no less true than remarkable, that swallows annually return to their respective haunts, and claim the same nests which they occupied the preceding season. This I have already demonstrated in a former work.* How they steer their unerring course to their native countries, after such a long and distant migration, cannot easily be conceived; unless we will suppose that they are guided, and impelled, as it were, by a certain quality of the air. If this be the case, at first setting out they must soar aloft, and after meeting with a particular part of the atmosphere, congenial to their natures, they follow the same aerial tract, which brings them safe to the respective countries at which they are wont to arrive.† But if we allow this supposition, we must grant that a providential instinct is the compass by which they are guided. All brute creatures, it is well known, have a kind of law implanted in them by the Great Conservator of the world; to this innate

* The book alluded to above, is a work which has lain by me finished some years, but has not yet been published, entitled, *A New and Complete Natural History of British Birds*. It will be comprised in two large volumes octavo, and will speedily appear. The publication of this performance has been purposely delayed, in order that it may be rendered as perfect and complete as possible.

† Not only martins, but every other summer bird of passage of the diminutive tribe, return to the same district, nay to the very same spot, which they inhabited in a former season. Fly-catchers I have known to build eight, nine, and even ten years successively, in a certain crevice of an old wall, not far from my dwelling; apprehensive that it was the same bird which annually and invariably visited the spot, curiosity prompted me to try an experiment, which put the matter out of doubt. When an opportunity offered, I took the female, cut off the extremity of the upper mandible of the bill, and with a knife made several perspicuous marks on its claws: this done, I set her at liberty: the succeeding spring the same bird returned, with the distinguishing marks I had given it, which was at once satisfactory. Perhaps some will say it is impossible the bird should survive, after it was deprived of the point of its bill; they will, however, please to observe, that what was cut off was so very inconsiderable, that the loss of it could hardly be perceptible to the bird; it could not therefore be any way detrimental to its feeding.

law

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law they readily yield obedience, guided by the impulse of which they cannot err. In short, this is the faculty which directs and regulates them in all their ways, and all their actions.

We have now nothing more to add concerning the swallow tribes. The clearest evidence imaginable has been given, that they move into other regions. The pains we have taken to prove this, the variety of authors we have consulted, and the many instances we have brought to confirm it, we doubt not, will be satisfactory to the curious.

The rest of our summer emigrants fall next under consideration. In the discussion of these, necessity obliges us to be less prolix, lest we swell this little volume beyond its appointed bounds.

The birds that leave us at the commencement of winter, and make their regular returns in the spring, are, the goat-sucker, the cuckow, the turtle, the stork, the crane, the swallow tribe, the nightingale, the black cap, the wheat-ear, the fly-catcher, the stone-chat, the whin-chat, the white-throat, the butcher-bird, the wry-neck, the red-start, the willow wren, etoboli, &c. &c.

It cannot be justly supposed that the small birds of passage, which have short wings, as the nightingale, black-cap, &c. can be capable of such distant migrations as the swallow; it is therefore pretty certain that they have their winter residence in Spain, or the south of France, countries which they may easily reach.

These birds, in all probability, fly from hedge to hedge, and from field to field, feeding as they go, till they come to the nearest sea coast, and if they have not strength to fly over, they can then with facility make their way to the southern parts of Europe; and in all probability, that innate knowledge which prompts them to take these yearly excursions, directs them to the narrowest part of our channel, to shun the hazard of passing over the wide ocean. But these short-winged birds are capable of longer flights than we are aware of,
for

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for Bellonius asserts, that he has seen quails, which by their structure seem little adapted for such long journies, passing and repassing the Mediterranean in great numbers, at the seasons when they leave us, and visit us again.

'Tis very probable that the whole tribe of our summer visitants do not all fly to the same countries, but spend the winter in different climates; for some of them leave us sooner than others, and appear again earlier or later in the spring, according to the distance of the countries to which they come and go.

Next to the cuckow, the swift is the first that disappears in the summer. In the beginning of September the nightingale retires, and is seen no more till the latter end of April, or the beginning of May. The black-cap, the white-throat, the wheat-ear, the fly-catcher, and the stone-chat, depart about the same time; but the two latter are usually foremost in the spring, frequently appearing about the middle of March. Next come the willow wren and the red-start, the whin-chat and the tit-lark, to proclaim the approach of spring, and charm us with their sweet variety of notes. The rest of the emigrants follow in succession, and are usually all arrived, scattered over the face of the country, by the beginning of May.*

* The coming of our summer birds are indeed, in some measure, regulated by the weather and the state of the season. When the spring commenceth early, they are commonly all arrived by the middle of April; when it is late, cold, and severe, as it frequently happens, they are retarded in their passage, and are never seen till the vernal season is very far advanced.

Many of them (especially those that are weak and feeble) undoubtedly (unable to proceed) perish in their journey. Many, it is likely, are destroyed by rapacious birds in their excursions to and from this island; and many that arrive here too early, die when the season is cold, for want of sufficient subsistence.—Rheumar informs us, that the swallows which appeared first, after the long and severe frost in 1740, all died of hunger. Many other small birds of passage, it is probable, perished by the same cause.

'Tis

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'Tis very remarkable that some of these, which are birds of passage in England, have a fixed residence in some countries all the year round. A species of swallows, Herodotus mentions, resides in Egypt the whole year. Prosper Alpinus asserts the same;* and Mr. Loten, late Governor of Ceylon, declares, that those of Java never remove. Every other sort we have heard of, except these, observe a periodical migration, or retreat. The swallows of Norway, North America, Kamschatka, the temperate parts of Europe; of Aleppo, and Jamaica, all agree in this one particular.†

On the contrary, some birds, which never remove from this island, are migratory in other countries. Larks, which are settled inhabitants here, are birds of passage in the north, deserting that region in winter; to return with the returning spring. The chaffinch; that constantly resides here, appears in Carolina and Virginia in the winter; but goes in summer to breed in the more northern countries.

Before we close this department, we shall say something of the larger birds of passage; viz. the cuckow, the turtle, the stoek, the crane, the goat-sucker, &c.

Of this tribe, the *cuckow* is the most remarkable. Early in the spring it discovers itself in our country by its well-known voice; at the approach of winter it totally disappears, and is heard of no more till the vernal season ensuing. Many are the conjectures how it preserves itself in the winter; some say that it hides itself in our island, and continues in a dormant state; and it has been asserted, that cuckows have been discovered in the midst of winter, not only in holes of trees, but under ground in sandy soils, also in the caverns of

* History of Egypt, i, 198.

† Consult Pontoppidan's History of Norway, vol. 2, page 98; Catesby's History of Carolina, vol. 1, page 51; the History of Kamschatka, page 162; Russel's History of Aleppo, page 70; and the Philosoph. Transactions, No. 361.

rocks,

rocks, antique buildings, old walls, out-houses, and the like. Nay, some pretend that they have been found in stacks of wheat, hay, &c. dead to appearance; but, after carrying them to a fire, they have revived,* and sung with as much vigour as in the midst of spring. By the ancients it was a received notion, that there is a secret sympathy between this bird and the kite, and that he takes a cuckow under his protection, and even wafts him on his shoulders to distant climates. There are many other fables of this bird, but it would be impertinent to recite them, as they are not only repugnant to common sense, but so anomalous, unwarrantable, and incredible, that they are quite unworthy the reader's attention.

Doubtless the cuckows, like swallows, &c. shift their habitation at the commencement of winter, and seek a country more suitable to their nature and constitutions. Probably their winter residence is in the southern climes, or, possibly, as they have great strength of flight, they may fly so far as Egypt or Ethiopia. If quails, which have short wings, can fly quite over the Mediterranean, sure Africa cannot be too distant a migration for these birds.

The cuckow makes the shortest stay † of any of our

* I have heard it affirmed, that an old hollow tree being cut down in a certain village in Wiltshire, and laid on the fire, a cuckow, revived by the warmth, jumped out of the fuel, and began repeating its usual note with great energy, to the admiration of the beholders: but I think this relation is too extravagant to deserve our credit.

† Though the generality of the cuckow tribe disappear at the latter end of June, some of the young are usually seen in England in July, August, and even in September. It is therefore certain the latter brood do not migrate with the rest, as many of them are not sledged, nor even hatched, when the old ones leave this country. How these inexperienced animals, who never strayed from their native district, and who are perfectly unacquainted with every other region, should discover the climate where the preceding emigrants have taken their abode, is a question not easily to be solved. Guided undoubtedly they are by a kind of instinct, implanted in them by the great Author of Nature.

E

summer

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summer guests. From the time of its arrival to its departure, is only three months. No reason can be assigned why they leave us so early; it cannot be owing to a scarcity of food, nor can the frigidity of the weather compel it to move, it being very warm when it departs. Likely, a certain temperament of the atmosphere, or a perceptible transition in their own bodies, may force them away, and prompt them to change their climate, in order to obtain what is more agreeable to them. Mr. Stillingfleet saith, the cuckow is compelled here by that constitution of air, which causes the fig tree to put forth its leaves. From the coincidence of the first appearance of summer birds of passage, this ingenious writer would establish a natural calendar in our rural œconomy.*

Pennant is of opinion there is only a partial migration of these birds; he thinks a few of them take shelter in hollow trees, and lie torpid, till animated by unusual warm weather. He says, he has two evidences of their being heard to sing as early as February, but they were not heard long; chilled again, he supposes, into torpidity.

I cannot coincide with him: 'tis indisputable there are instances of cuckows appearing in winter, but they are very rare and uncommon; and we may reasonably suppose, that when a straggler is seen in that severe season, that it was either *bewildered* in its passage, or was hatched *too late* to take its flight with the rest of the genus.

The *turtle-dove* (which we are next to consider) comes hither in the spring, and goes away again in autumn. Their winter retreat is in the warm southern climes, where they breed. These birds arrive here in vast flocks; they go off in the same manner, and few or none remain in our northern countries during the winter, unless they are kept in aviaries or cages. It is

* Calendar of Flora, vide preface throughout.

supposed

supposed many of these spend the dreary season in Egypt, and other parts of Africa.

Storks visit our island in the spring, and go off again early in the autumnal season. Naturalists are at a loss where these birds go when they quit this climate; but it is pretty certain they steer their course toward the southern countries. The periodical journies of the stork were taken notice of by the Antideluvians; and indeed, almost every naturalist of antiquity gives an account of their constant and regular migrations. These birds do not all fly to the same country; and it is very remarkable they always take their flight by night. Belon informs us they are common in the winter time in Egypt, and other parts of Africa. Some say, that when they go away, the stork, which arrives last to the place of rendezvous, is killed on the spot; but, in all probability, this assertion is not grounded on fact, but is only the spawn of superstitious credulity.

When they leave Europe, they gather together in vast flocks. Being thus assembled, they will continue for some days in the same place, chattering and making a great noise, as if debating of the method to proceed; then being silent for some time, after a signal given, they all fly off, fetch many great rounds near the earth, and then gradually ascend, still mounting higher and higher, till at length the great cloud, which a few moments ago darkened the atmosphere, is quite imperceptible. The celebrated Thomson has given such a fine and beautiful description of the passage of the storks, that we cannot withhold it from our readers.

Where the Rhine loses his majestic force
In Belgian plains, won from the raging deep,
By diligence amazing, and the strong
Unconquerable hand of liberty,
The stork assembly meets: for many a day
Consulting deep and various, e're they take
Their arduous voyage thro' the liquid sky.

E 2

And

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And now their rout design'd, their leaders chose,
 Their tribes adjusted, clean'd their vigorous wings,
 And many a circle, many a short essay
 Wheel'd round and round, in congregation full
 The figur'd flight ascends; and riding high,
 Th' aerial billows mixes with the clouds.

SEASONS, Autumn, l. 859.

The *crane* stays here somewhat longer than the *stork*, seldom deserting Europe till the middle of September. These birds are found in Lincolnshire, and many other parts of England; but the cold arctic region is their favourite abode. They come down into the more southern parts of Europe, rather as visitants than inhabitants, yet it is not easily ascertained how they portion out their time to the different parts of the world. Like *storks*, they migrate in immense flocks, and return in like manner. In Orleans, in France, October 1753, there were several thousands of them seen passing from the north to the south. Gesner assures us, that the cranes usually began to quit Germany from about the 11th of September to the 17th of October; from thence they were seen steering southward in numbers incredible. Redi informs us they arrive in Tuscany a short time after. In the severity of winter it is not unlikely but they may advance southward, still nearer the line.

When they migrate, they soar to an imperceptible height, and observe great regularity in their flight. Milton, in his *Paradise Lost*, book 7, l. 426, has elegantly expressed this circumstance.

Thus they, rang'd in figure, wedge their way,
 Intelligent of seasons, and set forth
 Their airy caravan high over seas
 Flying, and over lands with mutual wing
 Easing their flight, so steers the prudent crane
 Her annual voyage, borne on winds; the air
 Floats as they pass, fann'd with unnumber'd plumes.

The

Of Summer Birds of Passage 29

The arrival of these birds of passage is wonderfully regular. Jedi tells us, that in the fields near Pifa, in Italy, they appeared on the 20th of February, in 1667; on the 24th, in 1668; the 17th, in 1669; and the 15th, in 1670.

The *goatsucker*, by some called *caprimulgus*, is the latest summer emigrant we have. It does not reach us till the middle of May, and invariably retires before the latter end of August. In summer it is an inhabitant of Derbyshire, Shropshire, Yorkshire, and Wiltshire. It constantly flies by night, and is supposed, by Klein and many others, to be a species of swallow. This bird's winter residence is in some of the southern countries. As it disappears about the same time as the swift, it is probable it flies to the same region.

The *quail* is a regular emigrant, though it has been conjectured that it sleeps during the winter in some parts of Great-Britain. Annually they are seen crossing the Mediterranean in numbers immense. When they forsake this island, like cranes, they go off in the night, and usually fly in pairs. The quail is so tender a bird, that it cannot bear cold countries.

It appears surprising, that quails, which are so ill adapted for long flights, should attempt to fly over the wide extensive ocean; but it is certain they do. Was it not confirmed by undeniable attestations, it is so very extraordinary, that we could not credit it. Bellonius assures us, that when he went from Rhodes to Alexandria, in autumn, several quails, flying from the north to the south, were taken in his ship. Sailing at spring the contrary way, from south to the north, he observed them on their return; when many of them were taken in the same manner. This account coincides with many others to the same purpose. The quail generally chooses a north wind for these nocturnal adventures, the south being very detrimental, as it retards their flight, by moistening their plumage.

As

30 *Of Summer Birds of Passage.*

As we have now distinctly enumerated the whole tribe of the feathered nations which visit us in the spring, and desert us at the approach of winter; as we have marked the stated times of their going and coming, followed them in their aerial journies, and traced them to their respective regions, we shall now turn our view to our *winter emigrants*, and endeavour to satisfy the curiosity of the reader, by shewing the retreats of the fieldfare, the red-wing, the woodcock, snipe, &c. and leading him to those bleak and frozen climes, where they constantly and regularly emigrate.

OF

O F

W I N T E R B I R D S

O F P A S S A G E .

WHEN these birds leave Europe, they retire to the northern parts of the continent, where they breed, and reside during the summer months. At the return of winter they are driven southerly in quest of food, of which they are deprived by the ice and snow in those frigid regions.

Immense flocks of *fieldfares* and *red-wings* appear here about the middle of October, and leave us in the spring. It is imagined that those which visit our island have taken their flight from Sweden, Norway, and the neighbouring countries.

These birds are tempted here by the berries * which are found in great plenty in most parts of England, and which make a principal part of their food. Some of this tribe, however, are in some climates constant inhabitants, and never shift their quarters; those, for instance, of Prussia and Russia not only breed, but winter in those countries.

A convincing proof that these winter emigrants come here for food, is, because the numbers that appear annually are very disproportionate. In some seasons, when there is a great produce of hawthorn berries, every bush swarms with them; when there is a scarcity, it is remarked, very few of these birds are to be seen in this country. By this we may suppose, that they wander from country to country, and settle in that only where they find a good stock of food.

The

32 *Of Winter Birds of Passage:*

The fieldfare and red-wing (the Royston crow excepted) are the only birds of passage that constantly and unanimously leave us at the commencement of winter. And it is very extraordinary that these should leave us, there being no absolute necessity for their migration, either on the score of provision or climate. The place of their retirement is Sweden, and other cold countries, in this latitude; here they annually breed and pass their summers. When they steer their course back to Great-Britain, they company with red-wings, and make short flights, passing from hedge to hedge, and country to country, feeding as they go, till at length they reach our island. It is certain they spend the summers in Norway, Sweden, and the adjacent countries, because they are yearly seen passing and repassing from and to the northern parts in great numbers.

In the spring, when they quit Europe, conscious of the superior coldness of the boreal climes, they do not hasten thither immediately, but sail gradually on through the more moderate countries of Germany and Poland. When the severity of the cold is abated, and proper food may be met with for their subsistence, they journey on more expeditiously, and arrive at the northern regions. Here they disperse themselves over the face of the landscape, and remain in peace and plenty, till they are driven back again by the rigorous severity of the season.

The coming of these birds * may then be pretty well accounted for. Impelled by an innate principle of self-preservation, they go northward or southward in one simple tract. When their food fails them here, they

* The fieldfare and red-wing were the *Turdi* of the Romans; which they fattened with figs and bread mixt together. Varro tells us that they were birds of passage; common in autumn, and departing in the spring. In those times they must have been exceedingly plenty, for they were kept by thousands in their fattening aviaries.—Kramer Elench. 361. Varro, lib. 3, c. 5.

depart

depart elsewhere, and return again as soon as it is renewed. They do not arrive in France till the beginning of December.

We cannot pretend to determine why these birds leave us in the spring; nor do we find that any other naturalist can assign any just reason for their departure. At the time of their migration one would naturally imagine they would continue, and build their nests with us, as there is no obstacle with respect to food and climate. It is certain, however, that the majority, if not the whole tribe, depart to other countries for this purpose.

Perhaps it may be suggested that they do not leave us till the haws and other berries are all gone, and they are under a necessity to go in quest of subsistence elsewhere. This, however, is of no importance, unless it can be proved that the northern climes, to which they retire, afford them a fresh supply; which, in all probability, they cannot. Possibly, therefore, the food of these birds in summer is not the same as in the winter. But if we allow *this* conjecture, it is very ineffectual in solving the question, *Why do they leave us?* Undoubtedly they might, in our country, not only find provision in greater plenty, but much sooner, and with more facility, than in those frigid regions to which they remove.

We must, therefore, acknowledge, that we cannot thoroughly investigate this secret of nature. Providence (as a learned naturalist remarks) has created a great variety of birds, and other animals, whose constitutions and inclinations are adapted to the different degrees of heat and cold in the several climates of the world; he has also given them proper appetites for the productions of those countries, (whose temperature is agreeable with their natures) as well as knowledge and abilities to find them out. From whence we may conclude, that the birds before-mentioned could no more subsist in the sultry climes of the Molucca islands, than birds

F

of

34. *Of Winter Birds of Passage.*

of Paradise could in the frozen regions of Sweden and Lapland.

We shall now just mention other migratory birds which disappear in the spring, and endeavour to watch them to those abodes to which they annually resort.

The cold northern situations are the general summer rendezvous of *woodcocks*. Norway, Sweden, Lapland, and the neighbouring countries, are the places where they migrate to when they desert our island. When the cold rages there with great severity, they take their flight to more moderate climes, where the earth is open, penetrable, and adapted to their way of feeding. They appear among us about the middle of October; and disappear in February, or the beginning of March. A few of them have been known to breed here.*

Woodcocks are frequently seen in their migrations, passing to the north in pairs. Stragglers are sometimes found so wearied with their journey, that they are unable to proceed. A learned writer informs us, on the authority of Mr. Thomas Travers, of Cornwall, that the mariners of a ship, which was farther from land than any birds used to be found, discovered a bird hovering over them. When they first saw it, it seemed among the clouds, and was but just discernible; however, it gradually descended, took several circuits round the vessel, and at length lighted on the deck. The bird was so wearied and fatigued, that they took it off with their hands, and found it was a woodcock. Likely,

* We are informed that in Cafe wood, about two miles from Tunbridge, a few build almost annually; the young having been shot in the beginning of August, and were as healthy and big as they are with us in the winter, but not so well tasted. A female with egg was killed in that neighbourhood in April; the egg was as big as that of a pigeon. They are remarkably tame during incubation: A person who discovered one sitting, has often stood over it, and even stroaked it, notwithstanding it hatched the young, and at the proper season disappeared with them.

the

the poor creature was steering northward, in order to follow his feathered mates; but lost his way in its passage, and by the force of winds, or a storm, was driven from the true aerial tract. Instances of this kind often occur. Voyagers of veracity, whom I cannot but credit, have informed me, that they have seen swallows and other birds light on the ships sometimes, when they have been very remote from any shore. A stronger proof of the *real migration* of birds cannot be given.

'Tis very remarkable, that when the woodcock first arrives here, the taste of its flesh is quite different from what it is afterwards; it is very white, short, and tender, and seems to have no blood in it, but after it has been in this country a considerable time, it becomes more tough, stringy, and fibrous, like that of domestic fowls. If you shoot a cock just before their departure, it bleeds plentifully, whereas at the beginning of winter it scarce bleeds at all. From this it seems evident, that in those countries where they have their summer residence, they have a different kind of nourishment from what they have here. Probably their luxuriant and succulent kind of nourishment, which they meet with among us, prepares them for breeding in those countries where they retire, with the companions of their choice.

In the winter great numbers of woodcocks are seen as far south as Smyrna and Aleppo.* It has been also asserted, that some of them have appeared as far south as Egypt. In North-America and Newfoundland, woodcocks are unknown.

The *snipe* appears about the same time as the preceding. A few of them reside with us the whole year, but the generality of them desert with the woodcocks. Like them they have also their summer quarters in the north, and breed in the moist woods of Sweden, and other cold countries. Those which continue here

F 2

make

* Ruffel's History of Aleppo, 64.

36 *Of Winter Birds of Passage.*

make their nests in our low moors and marshes, and lay four or five eggs.*

The *hooded* or *Royston crow* come and go about the same time as the woodcock. Their winter abode is in Sweden and Austria, where they breed. In Scotland, in many parts of the Hebrides, the Orkneys, and Shetlands, they are found in great plenty, where they breed and reside the whole year. Those which migrate here at the commencement of winter, are supposed to be inhabitants of the northern countries.

Many have affirmed that these are not migratory, but we are confident they are. Belon, Gesner, and Aldrovandus agree, that it is a bird of passage in their respective countries. It is, however, somewhat remarkable, that this species should leave us, whose food is such, that it may be found at all seasons in this country.

The *dotterel* is said to be a bird of passage, but it is only a wanderer, shifting its habitation in the vernal and autumnal seasons, from the marshes to hilly situations. At those times they are very common on the Wiltshire and Berkshire downs. The green plover, the long-legged plover, and the sanderling, which are

* Those who are desirous of being more particularly acquainted with the natural history of the snipe, and other British birds, should consult a work, entitled, *A New and Complete Natural History of British Birds*, which, with great labour and expence, we have compiled. This performance is not yet published, but it is now going to the press, and will appear in a short time. There the Ornithologist will find the subject discussed as it ought, and all the errors of former writers corrected. There, we flatter ourselves, he will meet with a fund of knowledge, entertainment, curiosity, novelty, and instruction, infinitely superior to what other works on this topic can boast of. A curious, particular, and accurate account is given of every bird found in Great-Britain, whether aquatic, migratory, or local; and every thing relative to the nature of birds in general is treated of in as entertaining a manner as the nature of the subject would allow. In short, we think we may stile it, *A New and Complete System of British Ornithology*. See more of the particulars of this work in the Ladies Magazine for October, 1779; page 528.

seen

seen here in winter, and are supposed to be birds of passage, are only wanderers, as they are known to breed in some parts of England. 'Tis true they are migratory, i. e. they journey from country to country, but never totally leave this island. Curlews and lapwings are in the same predicament.



ACCOUNT of those BIRDS

Which are not Regular EMIGRANTS,

But only shift their Quarters at certain Seasons of the Year.

BIRDS of passage are generally understood to be those which are compelled annually to take long and distant excursions; but, in reality, almost every British bird is a bird of passage, though they may not journey to places so remote. Small birds usually remove at some seasons of the year, either from one country or district to another, or towards the shore, from the more inland provinces.

There are two periods in the year when these little animals change their haunts, the one in the spring, the other in the autumn. Why they observe, with such punctuality, these occasional migrations, we do not know; food perhaps may be deficient in those seasons, which may stimulate them to change their abode. When they begin their march, they assemble in vast flocks, and generally steer their course against the wind, if there be any stirring. Those flights of linnets which visit us in the spring are only wanderers, and belong to some other country.

In

38 *Account of Wandering Emigrants.*

In spring and autumn many persons obtain a livelihood by taking these birds with nets in their passage. Autumn is the principal season when the fowler employs his art to take these wanderers. His nets are most ingeniously constructed, and so contrived, as from a flat position to rise on each side, and clap over the birds that happen to alight between them. He has certain call-birds, generally consisting of five or six linnets, two greenfinches, two goldfinches, a bullfinch, a wood-lark, a red-pole, a tit-lark, and a yellow-hammer; these are put in cages at a little distance from the nets. He has also what are termed flur-birds, placed upon a moveable perch, which he can raise when he pleases by means of a string, which he lifts gently up and down as the wild bird approaches. But this is insufficient to call the wild bird down; it must, before it is captivated, be called by one of the small birds in the cages; on hearing the call of its feathered mates, the wild bird is stopped in its most rapid flight, and will immediately light within the snare. The bird-catcher instantly pulls a string, and the nets clap directly down on the unfortunate captive. Such an alluring power have the call-birds, that sometimes if half the flock only are decoyed, the others will unsuspectingly light between the nets, and become captives with their companions.

'Tis not easy to account for the nature of this call; perhaps it may be an invitation to food, a prelude to courtship, or a challenge to combat. When taken, the males are made captives for singing, and the females are killed to be served up to the tables of the delicate, or the rich. For a more satisfactory account of this matter, see *A New and Complete Natural History of British Birds*, before mentioned.

REFLEC.

REFLECTIONS

ON THAT

Truly admirable and wonderful INSTINCT,

THE

Annual Migration of Birds.

THE periodical migration of the feathered tribe, and their regular returns, are so extraordinary and unaccountable, so amazing and remarkable, that it cannot but excite our admiration, and fill us with astonishment! A stranger phenomenon we never heard of in all the material world! In all the boundless works of nature, nothing is more surprising, or has more excited the curiosity of man! Traverse the utmost limits of this terraqueous globe—explore the secret recesses of its inmost bowels—search the fluid realms of the watry world—pry with skilful eye into the whole chain of finny inhabitants that skim the fathomless deep—examine with nicest scrutiny the immense tribes of animals that walk the earth, and drink the golden day; extend your range—wing the aerial regions—scale the immeasurable arch—survey the sun and moon, and all the countless globes that roll above—and in all the grand tour, in your long, long excursion, in short, in the whole system of created things, what will you discover more wonderful—more curious—or more amazing!—Without any compass to regulate their course, or any chart to make observations in their voyage, these little animals sail over the ocean, and at length

40 *Reflections on the Migration of Birds.*

length arrive safe at the desired shore.—Not only arrive safe, but, what is still more extraordinary, always find the readiest way, and the shortest cut.—How admirable!—Surely we cannot but cry out—“Wonderful are thy works, O Lord!—thy ways are incomprehensible—they are past finding out!”

“The stork in the heavens knoweth her appointed times; and the turtle, the crane, and the swallow observe the time of their coming.”* All of them have their stated periods, which they duly and punctually observe. Even the young of these birds perceive how absolutely necessary it is to forsake the land of their nativity, and travel in quest of milder climes.† Some birds undertake jourmies that might intimidate even human perseverance. In spring the quails fly from the remote parts of Africa to European climes. After continuing with us the summer, they steer their flight back again to enjoy the temperate air of Egypt. Swallows launch quite over the Atlantic ocean, and return again the same way, the ensuing spring. The time of their going and coming is not the same with every species; some are waiting for the winter, and others for the spring. Some move off in summer, and others again in autumn.

When the migration season approaches, we observe birds not only to assemble in families, to incorporate in troops, but, previous to their long and distant journey, exercising themselves by taking long flights, &c.

* Jeremiah 8, 7.

† The desire of changing climate is very apparent in captive birds, and shews itself by the greatest anxiety and uneasiness imaginable. Indeed, it is one of the strongest affections of the birds instinct. Any one who keeps a bird of the migratory kind, will observe, that at the season of the year when those of the same tribe depart, the little captive will shew a great desire of being released; he will be incessantly making efforts to set himself at liberty, and perhaps occasion his death by his hard struggles to get loose. At other times he will be lively and chearful, tranquil and easy, and will remain quiet and contented in his prison.

The

Reflections on the Migration of Birds. 41

The circumstances of these migrations are various in different species. All birds of passage do not incorporate in troops; many set out singly, many with their females and families, and many march in small detachments. An innate instinct prompts them to remove at their respective seasons. As soon as provision fails them, or heat or cold incommodes them, they assemble* together, bring about them their young, and communicate to them their intention of changing climate. In what manner they do this—who convenes the assembly—what debates arise—or how they communicate the resolution taken—I will not pretend to determine. 'Tis indisputable not one of them deserts till the undertaking is fixed, and the proclamation has been published. Not a single loiterer is to be seen when the troops are preparing for their decampment, nor a single straggler to be found when they have once begun their march. Thus equipped, all unanimously begin their long aerial voyage. Over kingdoms and continents, hills and vales, cities, towns, villages, fields, deserts, and wide capacious seas, they wing their way, “by the liquid air up borne.”—Having finished their journey through the land, their wings become a kind of sails,† and they launch, though not into, yet over the ocean.‡ In a few weeks they arrive at the desired country, where they reside till the balmy gales of the spring invite them to return again.

How astonishing that such irrational and inexperienced animals should be able to perform such long journies!—that they should know the exact time when
to

* The reason why migratory birds assemble in flocks at the time of their departure, is, because by this augmentation of troops, they find themselves more capable of resisting their enemies.

† Remigio Alarum. VIRGIL.

‡ Most of our summer emigrants fly over the seas in their passage to distant countries. The swallows and martins steer their course over the Atlantic ocean. The numbers of birds that are
seen

42 *Reflections on the Migration of Birds.*

to go—know whither to steer,* and when to return. Certain it is, that birds are actuated by a peculiar *instinct*, implanted in them by the GREAT CREATOR OF ALL WORLDS—THE DIVINE OMNIPOTENT GOD. For, as Aristotle justly observes, they act not by art, neither do they enquire or deliberate about what they do, and yet they perform all their undertakings with unerring judgment, and inimitable skill.

What, saith a learned Naturalist, but the great Creator's instinct, should induce an unthinking, irrational bird, not only to venture over vast tracts of land, but even to launch over wide extensive seas. It cannot be supposed that they have any knowledge of the way, or any perception of distant places. Or should it be admitted that these little wanderers, by their high ascents into the atmosphere, can descry across the seas, and perceive the limits of the ocean, yet whoever told them? By what mysterious intelligence are they sensible that one land is more proper, one country better adapted to their constitutions, than another? That Britain (for instance) should afford them better ac-

seen annually skimming the pure marble air, and wafting themselves along above that immense world of waters, are amazing.

Who can recount what transmigrations there

Are annual made? what nations come and go?

And how the living clouds on clouds arise?

Infinite wings! till all the plume-dark air,

And rude resounding shore are one wild cry.

THOMSON'S AUTUMN.

* Quis non cum admiratione videat ordinem & politiam, peregrinantium avium in itinere, turmatum volantium, per longos terrarum & maris tractos absque aqua marina?—Quis eas certum iter in aëris mutabili regione docuit? Quis præteritæ signa & futuræ viæ indicia? Quis eas ducit, nutrit, & vitæ necessaria ministrat? Quis insulas & hospitia illa, in quibus victum reperiant, indicavit modumque ejusmodi loci in peregrinationibus suis inveniendi? Hæc sanè superant hominum captum & industriam, qui non nisi longis experienciis, multis itinerariis, chartis geographicis, & æcus magneticæ beneficio,—ejusmodi marium & terrarum tractus conficere tentant & audent. Lud. de Beaufort. Cos. div. sect. 5.

accommodations

Reflections on the Migration of Birds. 43

commodations than Egypt, than the Canaries, Spain, or any of those intermediate places, over which many of them probably fly.

Some are of opinion that all birds of passage are endowed with such an innate natural faculty, that they are susceptible of the transitions of the atmospherical fluid, or the steams of the bodies where they reside, the alteration, or deficiency of their usual food, &c. and that the changes arising from one or more of these in the temperament of their own bodies, induce them to change their situations, in order to avoid what is offensive, and obtain what is more agreeable to their nature and constitutions.—Mr. Derham is also of opinion, that the temperature of the air as to heat and cold, and their natural propensity to breed their young, are great incentives to migration. But it is (continues he) a very odd instinct that they should at all shift their quarters; that some certain spot is not to be found in all the terraqueous globe affording them convenient food and habitation all the year; either in the frigid climes, for such as delight in the colder regions, or the hotter, for such birds of passage that fly to us in summer.*

But not only birds, but divers species of fishes, have also their removes. River fish, for instance, as salmon, trout, &c. go up into the smaller brooks to breed; afterward they sail back, and go down into the very mouths of rivers that empty themselves into the ocean. Salmon annually ascend up from the sea to rivers four or five hundred miles distant, only to cast their spawn, and secure it in banks of sand. When the young are hatched, and excluded, by a wonderful and most surprising instinct, they return to them again. Young spawns having been marked, and cast into the river, have gone down into the sea, and returned again full grown, with their marks, in the same river. Great numbers of marine fish, as mullet, mackarel, herring,

G 2

pilchard,

* Derham's *Phys. Theol.* 347.

44 *Reflections on the Migration of Birds.*

pilchard, &c. come in shoals at certain seasons; but these having the capacious ocean to travel in, remove north and south, either for the superior warmth of the water, which is adapted to their constitutions, or for the plenty or agreeableness of the food such waters in all probability produce.

Several sorts of quadruped animals do also occasionally migrate, and remove from place to place. Where they can have sufficient covert, and plenty of food, those situations are usually preferred, and sometimes they range immense tracts of land before they can find a spot proper for these purposes. Ferocious animals of the desert, in order to satisfy the calls of hunger, have been known to travel into very distant countries. In very sharp seasons they do not take such long excursions; they then are compelled by necessity to approach nearer the vicinity of man; indeed keen hunger compels them: At this time the neighbourhood of Man (in those regions where those shaggy monsters reside) dreadfully re-echo with their different roarings; they stun the midnight hours with their yellings, and always make choice of the nocturnal shades to carry on their depredations. These circumstances are beautifully expressed by the Psalmist in his address to the Deity:—Thou makest darkness, and it is night, wherein all the beasts of the forest do creep forth. The sun ariseth, they gather themselves together, and lay them down in their dens. O Lord! how manifold are thy works! in wisdom hast thou made them all, the earth is full of thy riches.*

Pardon me, Reader, for this digression:—And as this subject of emigration is now concluding, permit me to apologize for the little errors which may occur in the preceding pages. Want of time and better mental abilities were two obstacles which prevented me from making it more perfect. Critics will therefore censure, and Zoufuses condemn; but I regard neither the

* Psalm 104, v. 20, &c.

Reflections on the Migration of Biras. 45

the one nor the other. Fearless of their malice and resentment, careless and inattentive to their observations, unaffected with the showers of arrows that they dart around me, I shall stand unmoved, unshaken, undaunted, and look down on them and their remarks with contempt and disdain.—To the candid, judicious Reader, I have also a word to say, and then I have done, which is,—let clemency plead for my errors, and good nature cover my faults;—pardon the mistakes of the press, and forgive my blunders, for such will unavoidably escape. Never since the degradation of man have mortals been free from them.—Patronisers of literature, be favourable to my performances;—condemn not too hastily my imperfect attempts;—and in return I will stimulate every nerve, and exert my utmost endeavours to render my papers worthy of your reception.

F I N I S.

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XXIII L S L R N. 26.

Emigration of Birds.

On
Birds

