

Tables
OF
THE VARIOUS SPECIES
OF
PERIODICAL BIRDS

OBSERVED IN THE
Neighbourhood of Manchester :

With a few remarks

TENDING TO ESTABLISH THE OPINION THAT THE
 PERIODICAL BIRDS MIGRATE.

BY MR. JOHN BLACKWALL.

(Read before the Society Jan. 21, 1822.)

AN accurate and comprehensive history of the periodical birds may now be considered as one of the greatest desiderata in ornithology. Hitherto, little has been done to elucidate the habits, manners, and economy of this interesting portion of the feathered tribes, as connected with their periodical appearance and disappearance; for although much has been written on the subject, few facts of any considerable importance have been ascertained; and even these few lie

scattered through the writings of such various authors, and are so blended with what is erroneous or merely conjectural, that it is no easy task to distinguish and collect them: consequently our knowledge of the circumstances that regulate the motions of the numerous species of periodical birds, is still very limited; and we are almost entirely ignorant of the places of their retreat, and of the mode of their existence in those retreats. Whether, when they withdraw, they depart from those districts and countries in which they cease to appear, or whether they conceal themselves, and remain in a state of torpidity, has not yet been positively determined; and opinions must continue to be divided on the subject, so long as authors indulge in fanciful speculations, instead of contenting themselves with collecting and arranging well authenticated facts, from which alone legitimate conclusions can be deduced.

The accumulation of facts, then, appears to be the most important object to be attained at present, and my principal motive for introducing the following tables and remarks to the notice of the Society, is the hope that they may be found to contribute, in some degree, to increase our scanty stock of in-

formation on this obscure branch of natural history.

It is remarkable, that almost all the catalogues of periodical birds with which I am acquainted, have been formed from observations made in the South of England. This circumstance is certainly calculated to give additional interest to the following tables, made in so northern a county as Lancashire. In forming them, I have ventured to deviate a little from the usual mode of arrangement, having separated those birds that are irregular in the times of their appearance and disappearance, and those species also that are periodical in particular districts only, from the regular summer and winter birds, and have classed them under appropriate heads. I have, however, retained the wheat-ear, whinchat, and stonechat among the summer birds, and the snipe among the winter birds; for though individuals of the three former species frequently remain through the winter in the southern counties, and though numbers of snipes breed with us annually, yet the periodical appearance and disappearance of a very large proportion of these birds cannot, I think, be questioned. It may be urged, that the three species of wagtail ought to be removed from among the birds that are partially periodical,

where I have placed them, for the same reason; and perhaps it would be more correct to class the pied and yellow wagtails with the summer birds, and the grey wagtail with the winter birds; though the pied species is frequently seen in winter, even in the northern counties, when the season is mild.

The remarks consist chiefly of details of such circumstances as have fallen under my own observation, and of conclusions drawn from them, and from an attentive consideration of the facts recorded by others.

T A B L E S

OF THE

*Various Species of Periodical Birds observed in
the Neighbourhood of Manchester.*

THE periodical birds may with propriety be arranged under four distinct heads.

1st. The summer birds, or those species that appear during the spring months and retire in autumn.

2d. The winter birds, or those species that appear during the autumnal months and withdraw in spring.

3d. Those birds that are irregular in the times of their appearance and disappearance.

4th. Birds that are partially periodical, retiring in particular districts only.

The tables contain those species of periodical birds that I have observed in the neighbourhood of Manchester, classed according to the above method; with the periods at which most of them appear and disappear, taken at a mean of eight years' observations, commencing with 1814, and terminating with 1821.

TABLE I.

Periodical Summer Birds.

Birds.	Appear.	Disappear
1 Sand Martin— <i>Hirundo riparia</i>	April 6	Sept. 16
2 Wryneck— <i>Yunx torquilla</i>	do.	
3 Willow Wren— <i>Motacilla trochilus</i>	do. 12	do. 12
4 Redstart— <i>Motacilla phœnicurus</i>	do. 13	do. 5
5 Wheat-ear— <i>Motacilla œnanthe</i>	do. 14	do. 13
6 Swallow— <i>Hirundo rustica</i>	do. 18	Oct. 11
7 Whinchat— <i>Motacilla rubetra</i>	do. 20	Sept. 17
8 Black-cap— <i>Motacilla atricapilla</i>	do. 22	do.
9 Martin— <i>Hirundo urbica</i>	do. 23	Oct. 13
10 Cuckoo— <i>Cuculus canorus</i>	do. 24	June 28
11 Yellow Willow Wren— <i>Motacilla sylvicola</i>	do. 28	Sept. 10
12 Stonechat— <i>Motacilla rubicola</i>	do.	do.
13 Sandpiper— <i>Tringa hypoleucos</i>	do. 29	do. 19
14 Grasshopper Warbler— <i>Motacilla locustella</i>	do. 30	
15 White-throat— <i>Motacilla sylvia</i>	May 2	do. 17
16 Swift— <i>Hirundo apus</i>	do. 8	Aug. 18
17 Pettychaps— <i>Motacilla hortensis</i>	do. 12	Sept. 11
18 Land Rail— <i>Rallus crex</i>	do. 14	do. 30
19 Flycatcher— <i>Muscicapa grisola</i>	do. 14	do. 13
20 Sedge Warbler— <i>Motacilla salicaria</i>	do. 19	
21 Red-backed Shrike— <i>Lanius collurio</i>	do.	
22 Goatsucker— <i>Caprimulgus Europæus</i>		do.

TABLE II.

Periodical Winter Birds.

Birds.	Appear.	Disappear
1 Snipe— <i>Scolopax gallinago</i>	Sept. 28	March 31
2 Redwing— <i>Turdus iliacus</i>	Oct. 9	do 26
3 Mountain Finch— <i>Fringilla montifringilla</i> ..	do. 18	April 14
4 Woodcock— <i>Scolopax rusticola</i>	do. 26	do. 2
5 Jack Snipe— <i>Scolopax gallinula</i>	do.	
6 Fieldfare— <i>Turdus pilaris</i>	Nov. 1	March 18
7 Water Rail— <i>Rallus aquaticus</i>		

TABLE III.

Birds that are irregular in the times of their appearance and disappearance.

Birds.	Appear	Disappear
1 Crossbill— <i>Loxia curvirostra</i>	Aug. 5	Nov. 19
2 Siskin— <i>Fringilla spinus</i>	Dec.	
3 Chatterer— <i>Ampelis garrulus</i>		
4 Hoopoe— <i>Upupa epops</i>		
5 Great Shrike— <i>Lanius excubitor</i>		

TABLE IV.

Birds that are partially periodical.

Birds.	Appear	Disappear
1 Thristle— <i>Turdus musicus</i>	Feb. 4	Nov. 2
2 Starling— <i>Sturnus vulgaris</i> ...	do. 9	Aug.
3 Green Grosbeak— <i>Loxia chloris</i>	do. 25	Oct. 23
4 Common Bunting— <i>Emberiza miliaria</i>	March 3	
5 Pied Wagtail— <i>Motacilla alba</i>	do. 11	do. 16
6 Reed Bunting— <i>Emberiza schoeniclus</i>	do. 17	Sept.
7 Lesser Redpole— <i>Fringilla linaria</i>	April 3	Nov. 5
8 Yellow Wagtail— <i>Motacilla flava</i>	do. 17	Sept. 10
9 Lapwing— <i>Tringa vanellus</i>	do.	
10 Merlin— <i>Falco oesalon</i>	Oct.	
11 Grey Wagtail— <i>Motacilla boarula</i>		April
12 Ring Ouzel— <i>Turdus torquatus</i>	Dec.	

A Table of several remarkable Periodical Birds, exhibiting the mean temperature of those days on which they have appeared and disappeared in the Neighbourhood of Manchester during the last five years, as deduced from observations on a pair of Rutherford's horizontal self-registering thermometers, exposed to the open air in a shady situation; the general means, or the means of the total number of observations accompanying each species, with the difference of the means both general and particular, being also given. When the mean temperature at the time of the disappearance of any species, exceeds the mean temperature at the time of its appearance, the sign + is prefixed to the difference, the sign - being prefixed whenever the contrary occurs.

BIRDS.	1817.	Mean Temperature.	1818.	Mean Temperature.	1819.	Mean Temperature.	1820.	Mean Temperature.	1821.	Mean Temperature.	General Means.
Sand Martin { appeared. ... disappeared. ...	April 3	51°	March 27	40°	March 31	54°	April 4	55°	April 9	53.°5	50.°7
	Sept. 17	64.5	Sept. 15	58.5	Sept. 21	49	Sept. 14	66.5	Sept. 14	55.7	58.8
	Difference of means...	+ 13.5		+ 18.5		- 5		+ 11.5		+ 2.2	+ 8.1
Willow Wren { appeared. ... disappeared. ...	April 19	43	April 8	48°	April 7	56	April 7	46.5	April 17	44.5	47.6
	Sept. 12	62.5	Sept. 13	55	Sept. 7	61	Sept. 8	62	Sept. 7	64.2	60.9
	Difference of means...	+ 19.5		+ 7		+ 5		+ 15.5		+ 19.7	+ 13.3
Swallow { appeared. ... disappeared. ...	April 25	42	April 15	52.5	April 11	52	April 27	44	April 20	49	47.9
	Oct. 9	51.5	Oct. 20	56	Oct. 15	49	Sept. 30	48.5	Oct. 11	52.7	51.5
	Difference of means...	+ 9.5		+ 3.5		- 3		+ 4.5		+ 3.7	+ 3.6
Martin { appeared. ... disappeared. ...	May 6	53	April 19	42.5	April 15	48	April 26	49.5	April 22	51	48.8
	Oct. 12	45.5	Oct. 20	56	Oct. 20	52	Oct. 8	50	Sept. 30	51	50.9
	Difference of means...	- 7.5		+ 13.5		+ 4		+ .5		0	+ 2.1
Cuckoo { appeared. ... disappeared. ...	May 9	47.5	April 25	40	April 15	48	April 19	54.5	April 22	51	48.2
	June 25	72	June 17	64.5	June 23	61.5	June 30	61	June 28	56	63
	Difference of means...	+ 24.5		+ 24.5		+ 13.5		+ 6.5		+ 5	+ 14.8
Swift { appeared. ... disappeared. ...	May 10	50.5	May 1	41.5	May 5	52	May 2	53.5	May 19	48	49.1
	Aug. 11	56	Aug. 15	60	Aug. 12	69	Aug. 12	63.5	Aug. 14.	59.2	61.5
	Difference of means...	+ 5.5		+ 18.5		+ 17		+ 10		+ 11.2	+ 12.4
Redwing { disappeared. ... appeared. ...	April 2	52.5	March 13	40	March 24	43	April 3	54	March 5	37.5	45.4
	Oct. 10	49	Oct. 15	57.5	Sept. 29	53	Sept. 26	47	Oct. 19	49.2	51.1
	Difference of means...	+ 3.5		- 17.5		- 10		+ 7		- 11.7	- 5.7
Fieldfare { disappeared. ... appeared. ...	March 25	45	March 26	40	March 18	40.5	March 20	43	Feb. 25	34	40.5
	Oct. 29	41.5	Nov. 2	55	Nov. 4	51.5	Nov. 11	41.5	Oct. 25	47.5	47.4
	Difference of means...	+ 3.5		- 15		- 11		+ 1.5		- 13.5	- 6.9

*Remarks tending to establish the opinion that
the Periodical Birds migrate.*

THE gradual increase of temperature in spring, and its decrease in autumn, are circumstances that seem to be so closely connected with the appearance and disappearance of the periodical birds, that they have long been considered as the primary causes of these phenomena. In reflecting on this very generally received opinion, it occurred to me, that I had never met with any attempt to ascertain how nearly the temperature at the time of the appearance of these birds coincides with the temperature at the time of their departure; and as this is a consideration of no slight importance, I resolved, at least in some measure, to supply the deficiency. For this purpose, I took from my journal the dates at which several of the more remarkable species of periodical birds have appeared and disappeared in this neighbourhood during the last five years; and having arranged them in the order of their occurrence, I attached to each the mean temperature for that day, as in the annexed table, (*see table.*)

According to this table, it seems that the temperature is, in general, considerably higher when the sand martin, willow wren,

swallow, and martin withdraw, than it is when they appear; and with regard to the cuckoo and swift, this is uniformly the case in a very remarkable degree: but, as the motions of the periodical birds may be supposed to be influenced by the weekly or monthly, rather than by the daily mean temperature; let us compare the mean temperature of April, the month in which most of the summer birds are first seen, with that of September, the month in which they chiefly retire.

A comparative view of the mean temperature of April and September, from 1817 to 1821 inclusive.

Years.	1817.	1818.	1819.	1820.	1821.	Gen. means.
April...	46.8	45.1	50.5	50.7	48.5	48.3
Sept. ..	58.9	58.3	57.1	56.1	58.4	57.7
Dif. of means.	+12.1	+13.2	+6.6	+5.4	+9.9	+9.4

Still the temperature at the time of the disappearance of the birds under consideration is found greatly in excess. We will now examine how nearly the mean of October corresponds with that of April.

A comparative view of the mean temperature of April and October, from 1817 to 1821 inclusive.

Years.	1817.	1818.	1819.	1820.	1821.	Gen. means.
April...	46.8	45.1	50.5	50.7	48.5	48.3
Oct.	46.3	56.5	50.1	47.7	50.5	50.2
Dif. of means.	— .5	+11.4	— .4	—3.0	+2.0	+1.9

A very near approximation is here observable in the temperature of these months, allowing for the unusual warmth of the latter in 1818: yet swallows and martins are almost the only summer birds seen in October, and they generally retire before the termination of the second week; though bats, field-mice, and various species of phalænæ, tipulæ, muscæ, &c., are visible till the close of November; and even through the winter when the weather is open. In the year 1820, long-eared bats (*vespertiliones auriti*) were observed till nearly the middle of November: and in 1821, they were first noticed on the 23rd of April, the mean temperature for the day being 50°.5, and were seen through November, to the 8th of December, when the mean temperature was 46°; the mean for November being 47°, which is within 1°.5 of that of April for the same year.

Now, if the periodical summer birds, when they withdraw, do not migrate into more genial climates, they must retire to suitable retreats, in which they pass the winter months in a state of torpidity. But where are these suitable retreats to be found? The notion of the submersion of these birds in lakes, ponds, and rivers, is too absurd to merit a moment's consideration, as they are not only specifically lighter than water, but quite unfitted for existence in it by their organization.

Mr. Gough in his remarks on migration, published in the *Memoirs of this Society*, Vol. II. New Series, from a consideration of the laws that regulate the temperature of the earth at all moderate depths beneath its surface,* clearly establishes the fact, that deep caverns cannot be the winter retreats of the periodical summer birds, as their temperature is not far from the maximum when these birds retire; and is near the minimum about the time that they begin to appear. He then proceeds to observe, (p. 461—2,) that “very few arguments will be now required to demonstrate the impossibility of the analogy which is supposed to connect the

* Those who wish for information on this subject, may consult Saussure's *Voyages dans les Alpes*. Tome III, chapitre XVIII.

periodical birds of summer, and the sleeping animals of winter. It is sufficient barely to remark, that the former are never found slumbering with the latter, near the surface of the earth, and deep caverns are proved to be unfit for the reception of any creature in the torpid season. Consequently the birds in question desert the temperate zones at the approach of winter, to seek a better climate in lower latitudes." These conclusions, however, will appear to have been formed rather hastily, when we consider what numbers of bats become torpid every winter in this country, and how rarely they are discovered in their dormitories. Might they not have been derived more satisfactorily, from the circumstance of the summer birds being seldom or never found abroad, with the sleeping animals, during the mild weather that we frequently have in winter? Bats, field-mice, &c., usually appear when the mean daily temperature is about 50° ; but I am not aware that there is a single instance on record, of any of our periodical warblers, properly so called, having been observed in the cold season, either in a state of active existence, or of torpidity.* A few, indeed,

* Since writing the above, I find that Montagu, in the Supplement to his Ornithological Dictionary, asserts that he has occasionally dis-

are occasionally to be seen at the customary time in spring, even when the weather is frosty, the increments of temperature by no means corresponding with the sun's increasing northern declination, but they generally seem to withdraw again. On the 9th of April, 1821, several sand martins were observed at a sand-pit in the township of Cheet-ham, but the weather becoming cold and stormy, they quickly disappeared: they were, however, soon after discovered in greatly increased numbers, at a sheltered bend of the river Irwell, in the adjoining township of Broughton. This circumstance proves, that if the weather is severe and boisterous when the summer birds are first seen in spring, they do not retire to their winter retreats, as has been supposed, but merely seek sheltered situations where they can procure a supply of food.

Inquiries into the temperature of the supposed winter retreats of the periodical summer birds, may now be looked upon, it is presumed, as quite superfluous, since it is sufficiently apparent from the preceding tables, that even that of the atmosphere is much higher at the time they disappear than it is

covered the lesser pettychaps (*Motacilla hippolais*) in the south of Devonshire, in mild winters.

when they appear, the very reverse of what ought to be the case if they become torpid, and of what is actually found to be so, with the sleeping animals of winter: indeed, it seems impossible that any animal should become dormant, in a temperature superior to that which is required to revive it from its lethargic state: it is evident, therefore, that the birds in question must migrate. As there are, however, several other curious facts relating to the periodical birds, which throw great light on the subject of migration, and powerfully tend to confirm this opinion, I shall proceed to examine them.

It is a very surprising circumstance, that several species of periodical summer birds almost constantly return to the same places in the same numbers; and there are sufficient reasons for believing that these birds are generally the same individuals. Four or five pairs of swallows, and about two pairs of redstarts and of flycatchers visit our family residence, in Crumpsall, every spring; and White in his *Natural History of Selborne*, p. 230, says, “among the many singularities attending those amusing birds the swifts, I am now confirmed in the opinion that we have every year the same number of pairs invariably:” and again, “the number that I con-

stantly find are eight pairs." Now, as these birds usually make their nests in the same situations, this alone, is a strong proof of their identity: great additional weight, however, is given to this proof, by the peculiarity of the situations in which such birds occasionally build. For three successive years, a pair of swallows built in a pig-sty belonging to a relation of mine, their ingress and egress being by a very low entrance: and in Bewick's *History of British Birds*, Vol. 1. p. 253, it is stated on the authority of Sir John Trevelyan, Bart., that "at Camerton Hall, near Bath, a pair of swallows built their nest on the upper part of the frame of an old picture over the chimney, coming through a broken pane in the window of the room. They came three years successively, and in all probability would have continued to do so if the room had not been put into repair, which prevented their access to it." White, in speaking of the Selborne swifts, (*Hist. Sel.*, p. 186,) says, "they frequent in this village several abject cottages; yet a succession still haunts the same unlikely roofs: a good proof this," he observes, "that the same birds return to the same spots:" and he remarks of the martin, (p. 161,) that, "the birds that return yearly bear no manner

of proportion to the birds that retire;" and this is uniformly the case. Now swallows and martins have frequently two broods in a summer; the first consisting of about five young ones, and the second of three, upon an average; and redstarts, flycatchers, and swifts, have one brood; the two first species usually rearing four or five, and the last two young ones. What then becomes of this increase? If these young birds do not quit the country, why are they not seen in the ensuing spring? These are perplexing questions, questions which the advocates of torpidity will find it impossible to answer: indeed, they involve difficulties which can only be removed by admitting, what is undoubtedly the case, that these birds migrate; and that being deserted by the old ones, and losing all recollection of the places where they were brought up, they are directed in their spring flight by fortuitous circumstances, and are thus diffused over a large portion of the globe.

The highly interesting and important fact, that several species of periodical summer birds moult during the interval that elapses between their departure and re-appearance, if generally known to ornithologists, would, it is reasonable to suppose, have been fre-

quently and strenuously urged, as one of the most conclusive arguments that could be advanced in support of migration: but notices of this nature are extremely rare; as perhaps no part of the animal economy of the feathered tribes, has been so entirely neglected by natural historians, as their moulting. That swallows, swifts, cuckoos, redstarts, and flycatchers, moult during their absence, scarcely admits of a doubt. I have cut feathers out of the wings and tails of swallows, so that I could easily distinguish them when flying; and I find that such feathers are never replaced while these birds remain with us. Great numbers of young swallows retire in autumn, before the exterior feathers of their tails have acquired their full length; yet the tail feathers of those birds that return in spring are always perfect in their growth. To these facts I shall add a few extracts from Mr. Pearson's account of his experiments made for the purpose of preserving swallows alive through the winter, as given in Bewick's *British Birds*, Vol. 1. p. 250—1, which are decisive as to the moulting of this species. The first year's experiment failed, but the second attempt was completely successful, as Mr. Pearson states, that "the birds throve extremely

well; they sung their song through the winter, and soon after Christmas began to moult, which they got through without any difficulty, and lived three or four years, regularly moulting every year at the usual time. On the renewal of their feathers it appeared that their tails were forked exactly the same as in those birds which return here in the spring, and in every respect their appearance was the same. These birds were exhibited to the Society for promoting Natural History, on the 14th day of February, 1786, at the time they were in a deep moult, during a severe frost, when the snow was on the ground." The account is concluded by Mr. Pearson in the following words. "Jan. 20, 1797.—I have now in my house, No. 21, Great Newport-street, Long Acre, four swallows in moult, in as perfect health as any birds ever appeared to be in when moulting." The plumage of swifts, from exposure to the sun and air, loses that deep soot colour which it always has on their arrival, and becomes gradually paler till they withdraw. This circumstance has not escaped the observation of Mr. White. (See his *Hist. Sel.*, p. 183.) The plumage of young cuckoos, redstarts, and flycatchers, is very different from that of adults. Young cuckoos have the upper parts

marked with various shades of brown, mixed with black, where the old birds are dove-coloured; and the under parts are pale brown, barred with dusky brown, where the old ones are white, barred with black: in short, their appearance is in many respects so totally different from that of their progenitors, that they easily might be, and probably often have been mistaken for a distinct species. Young redstarts and flycatchers have their heads, necks, backs, scapulars, &c., spotted; the former with pale yellow, and the latter with white, which is not the case with old birds; and those marks which so clearly characterize the sexes of redstarts when their plumage is matured, are altogether wanting in young birds. Now, as young cuckoos, redstarts, and flycatchers, do not appear to cast their nest feathers before they retire, they are readily distinguished from old birds while they stay with us: and as birds of these species are never found to retain their first feathers on their return in spring, they must moult in their absence; and it is probable that this may be the case with the periodical summer birds generally:* but it is perfectly ridiculous to suppose that these birds in a state of torpidity, when the animal

* In this attempt to prove that some of the periodical summer birds

functions are nearly suspended, can both throw off their old feathers, and put out new ones; therefore, they must seek those countries which supply a requisite degree of warmth, and a sufficient abundance of food, to enable them to change their feathers. Old cuckoos leave us late in June or early in July, when the temperature is approaching the maximum for the year; and swifts retire about the middle of August, when the temperature though receding from the maximum, is still very high. To what cause, then, shall we attribute the early retreat of these birds? certainly not to a deficiency of food, as young cuckoos are frequently found to remain upwards of a month after the old birds have left; and swifts are occasionally seen, long after the great body of their congeners has withdrawn;* and yet these birds procure

moult during their absence, I have purposely confined my remarks to such species as are well known, and easily observed. The red-backed shrike, whinchat, and some others, with whose habits and economy we are less familiar, might, however, be added to those already enumerated. In my opinion respecting the moulting of the red-backed shrike, I am supported by Montagu; who affirms, "that all the young, when they leave us in the month of September, very much resemble the adult female; and the whole return to us again in about six months, in their full sexual plumage." See the Supplement to his Ornithological Dictionary.

* In the year 1815, I saw a swift in the township of Crumpsall, on the 20th of October; and the same bird was seen again on the 25th; which is more than two months beyond the time at which these birds

plenty of nourishment. Is it not, rather, occasioned by a propensity to moult, and the want of a suitable degree of warmth to enable them to change their feathers? Our domestic fowls begin to moult in July, the hottest month in this latitude, and birds in a state of nature, usually moult when they have done breeding: if, therefore, the temperature of July is not sufficiently high to promote the moulting of the periodical summer birds; cuckoos, as they leave the care of their progeny to strangers, and, of course, are at liberty when they have deposited their eggs, should be the first birds that withdraw: swifts also, having only two young ones to rear, should be the next birds that retire: the periodical warblers, and those birds that have five or six young ones, ought to quit in the next place: and swallows and martins,

usually depart, and nearly a fortnight after the last swallows and martins had left us: and in the year 1818, I saw one at Chester, on the 18th, 19th, and 20th of October. I had opportunities of observing both these birds attentively for a length of time, and I remarked that they always seemed to be in the active pursuit of their prey. White, in his *Hist. Sel.* p. 264, mentions an instance of a swift being induced by attachment to its young, to remain till the 27th of August; and though deserted by its mate early in the month, it reared a second brood (the first having been destroyed) without assistance: a convincing proof, that however disagreeable it may be for swifts to prolong their stay, they are not compelled to quit so early as they do, by any difficulty in obtaining food.

which have two broods in a season, ought to be the last that depart: and this is always found to be the case: so that whether the departure of these birds be influenced by a propensity to moult or not, it seems to be regulated, in a great measure, by the cessation of their parental cares, and not by temperature solely.

It will be difficult to produce any direct evidence of the migration of the periodical summer birds, until their winter retreats are well ascertained;* but from what has been already advanced respecting these birds, it will be seen, that this fact may be most satisfactorily proved indirectly, by a process of reasoning somewhat analogous to that adopted by geometricians in investigating such propositions as do not admit of a direct solution; namely, by shewing that the contrary supposition involves an absurdity. It is absurd

* Adanson asserts that European swallows pass the winter in Senegal, but does not particularize the species: (see his *Histoire Naturelle du Sénégal*, p. 67 :) and it appears probable, from the observations of Mr. White's brother, (the Rev. J. White,) who resided at Gibraltar; (*Hist. Sel.*, p. 87, 88, 139 ;) that many of our periodical summer birds may winter in Africa. The length and difficulty of such a journey, are the chief objections that have been urged against this opinion; but they will cease to be looked upon as serious obstacles, when we reflect, that these birds may pass hence to the equator, without crossing any great extent of sea; and, that as they are continually advancing into better climates, they are enabled to travel leisurely, there being no necessity for extraordinary haste.

to suppose that the summer birds can become torpid with an increased or an increasing temperature: or that they can change their feathers in such a state, when the organs of secretion are known barely to perform their several offices: or that under such circumstances, scarcely more than one fourth of those birds that withdraw in autumn, should re-appear in spring, though the same birds almost constantly return to the same haunts: these suppositions, I repeat, are manifestly absurd, therefore the summer birds must migrate.

Writers in treating of the periodical birds, have confined their observations, almost exclusively, to the various species of swallow; neglecting, in a great measure, the short-winged summer birds, which seem to be the least qualified for migration; and the periodical winter birds, which furnish some of the strongest arguments in support of it.

If the periodical winter birds, do not leave this country in spring, they must stay with us the year through: yet it is in the highest degree improbable, that woodcocks, jack snipes, mountain finches, and the numerous flocks of redwings and fieldfares that are seen in winter, should remain here during the summer months, and yet elude the observation of ornithologists. The redwing is ge-

nerally admitted to be a bird of song;* and as most of the thrush tribe sing more or less, it is very probable that the fieldfare is a singing bird also; yet we know nothing of their songs, or summer notes, but are merely acquainted with their calls, which are heard in winter only: and I believe there is not one well authenticated instance of the nests of these birds having been found in England.

According to Linnæus, redwings and fieldfares breed in Sweden. In his *Fauna Suecica* he says of the fieldfare, that “*maximis in arboribus nidificat:*” and of the redwing, that “*nidificat in mediis arbusculis, sive sepibus: ova sex cæruleo-viridia maculis nigris variis:*” but it is plain that they must leave that country in winter, as with us, redwings are among the first birds that suffer in inclement weather; and both redwings and fieldfares withdraw from our northern counties, and great numbers of them even quit the kingdom entirely, during long and severe frosts, especially if they are accompanied with snow.†

* Linnæus says, that “its lofty and varied notes rival those of the Nightingale.” See his *Lachesis Lapponica*, translated by J. E. Smith, M. D. &c. Vol. 1. p. 6.

† In the severe winter of 1813--14, the northern counties of England were nearly deserted by redwings and fieldfares; and I have been informed, that at this period they were far from being plentiful in the southern counties.

Scopoli, in his *Annus Primus*, says of the woodcock, that “*nupta ad nos venit circa æquinoctium vernale. Nidificat in paludibus alpinis. Ova ponit 3—5. Migrat post æquinoctium autumnale. Fugit brumam et acre gelu.*” and of the fieldfare, that “*migrat Novembri mense.*” Thus it appears that woodcocks breed in the Tyrol, which they quit about the latter end of September; and that fieldfares leave the same country in November: and it is well known that woodcocks desert the more northern countries of Europe at the commencement of winter. Here, then, we have positive evidence of the migration of the redwing, fieldfare, and woodcock, some both of their summer and winter haunts being known. That redwings and fieldfares migrate, those who are acquainted with their calls may be easily convinced; as the faint scream of the former, and the chattering note of the latter, may be heard frequently repeated through the nights of October and November, as their numerous flights pass over head; and as this is the time at which these birds visit us, and as their calls cease to be heard at night soon after this period, they must then be on their passage from some other country to this, or to countries still farther south. This circumstance also

establishes the fact, that some species of periodical birds perform their migrations in the night; and it is probable that this is the case with most of them; as I have frequently looked through the woods and plantations in Crumpsall with great care in April, the month in which most of the summer birds appear, without perceiving a single individual of any of the migratory tribes; yet early in the morning of the day following that on which the search was made, I have been surprised to hear the notes of the redstart and willow wren, and to find that the latter species had arrived in considerable numbers.

Having endeavoured, in the foregoing remarks, to prove the migration of the periodical summer and winter birds; I shall here briefly observe, that our irregular visitors also must migrate; as it is equally impossible that they should lie torpid during a period of several years, or that they should escape the notice of observers for so great a length of time. Thus, the migration of every description of periodical birds, whose disappearance it has been difficult to account for, seems to be established; and I shall conclude this paper with observing, that if swallows and martins do become torpid under some circumstances, they are probably en-

dowed with this propensity, for the preservation of those individuals that are prevented from joining their species in their autumnal flight.



Blackwall, John. 1824. "Tables of the Various Species of Periodical Birds Observed in the neighbourhood of Manchester with a few remarks tending to establish the opinion that the Periodical Birds Migrate." *Memoirs of the Literary and Philosophical Society of Manchester* 4, 125–150.

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