REPORT ON THE EFFECT OF THE SEVERE WINTER OF 1939-40 ON BIRD-LIFE IN THE BRITISH ISLES.

BY

N. F. TICEHURST AND H. F. WITHERBY

WITH AN ACCOUNT OF THE WEATHER

BY

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INTRODUCTORY.

IN response to our requests for information on this subject we have received a large number of reports. The amount of information observers were able to give varied greatly and many, owing to various reasons, were unable to make comparisons of the number of resident birds breeding in 1940 and in previous years in districts they knew. On the whole, however, the observations sent in give a very fair picture of the effects of the severe weather on bird-life in England and Wales, but from Scotland and Ireland we have unfortunately very little information.

Similar reports were published in this magazine on the effect on bird-life of the very severe weather in the winter of 1916-17 (Vols. XI, pp. 266-271, XII, pp. 26-35) and that of early 1929 (Vol. XXIII, pp. 154-158). In 1917 the severe weather was very widespread and prolonged and the destruction to bird-life very serious, many species taking years to recover their numbers. In 1929 the conditions, though locally severe on birds, were not anything like so prolonged or widespread.

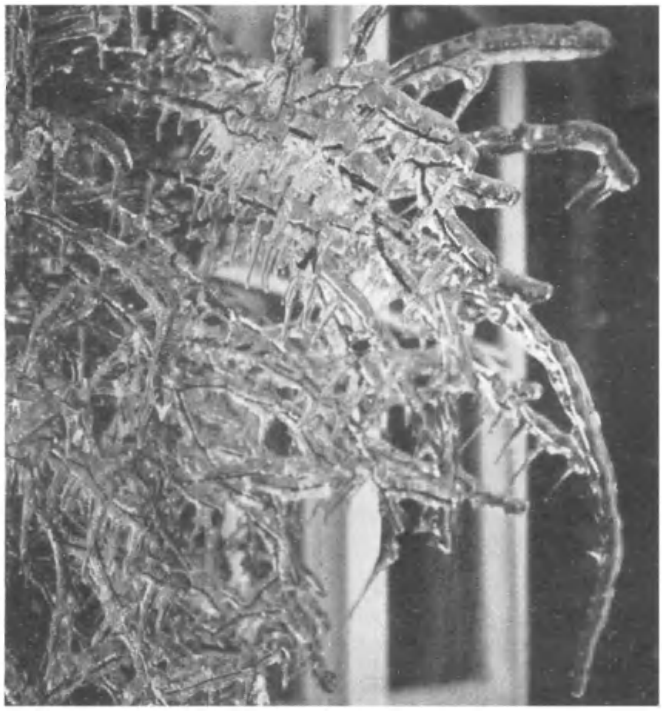
In 1940 the general effects, though far more serious than in 1929, were not so disastrous as in 1917. There is little doubt that the conclusion reached in the report for 1917 that it was the very prolonged cold that caused such heavy mortality was correct and this is borne out by Mr. Hawke's comparison of the weather in his report, which follows. Another important consideration, which affected those species which retreat from bad weather, was that the severe conditions were prevalent to a far greater extent in S.W. England and Ireland in 1917 than in 1940.

So much may be said in a general way and we shall make more exact comparisons under species in a systematic list.

In this report we have the great advantage of including an authoritative account on the weather by Mr. E. L. Hawke, who has most kindly taken an interest in our enquiry and

has generously given us of his time and expert knowledge in providing the special report appearing below.

We have also to thank specially those who have been so good as to allow us to reproduce here some excellent photographs of ice-formation on trees and bushes.



ICE-FORMATION ON A ROSE-BUSH,
Marlborough (Wilts), January 29th, 1940.
Diameter of ice about 1 inch.
(*Photographed by* Rev. R. H. Lane).

The ice-storm was no doubt responsible for considerable mortality and weakening in tree-haunting species as were somewhat similar conditions in 1917. In 1929 there was no such ice-storm and tits of the genus *Parus* and Tree-Creepers for instance, were not noted as being seriously affected. Although we have no detailed comparative record for 1917 it may be noted that in 1940 at Chobham (Surrey) while every small twig

and bough on the trees was thickly encircled with ice the under surface of large boughs was bare as was a strip down the trunks of large trees on their western side. This was also noted at Evesham (Worcester). Watching a party of tits and creepers in a wood at Chobham on January 29th

ICE-FORMATION ON LARCH TREES.
Near Aberystwyth (Cardigan), January 30th, 1940.
Diameter of ice, 1½-2 inches.
(*Photographed by* W. A. Cadman).

(the second day of the ice-formation) H. F. W. observed that the birds frequently explored the ice-covered portions of the trees and pecked at them with no effect, but seemed to be able to get some food on the bare strip of the trunks and on the under-side of the large boughs though the area of these parts uncovered by ice was probably too small to provide enough food to sustain them, and many of the tits made visits to the bases of some long *Molinia* grass nearby in which Reed-Buntings were feeding.

In many places the damage to trees was very great, but Mr. W. A. Cadman in mid-Wales and Mr. G. Peirson in Wiltshire, who have paid particular attention to this subject, consider that the effect of this damage on bird-life was very slight. The wide destruction of gorse in many parts no doubt had an effect on some species.

THE WINTER WEATHER OF 1939-40 IN THE BRITISH ISLES.

BY

E. L. HAWKE.

INTRODUCTORY.—This report is based primarily on statistics issued by the Meteorological Office, Air Ministry, and refers in the main to the three months December, January and

ICE-FORMATION ON AN OAK TREE.
Sheriffs Lench, Evesham, January 28th, 1940.
Diameter of ice 1-1½ inches.
(*Photographed by* A. J. Harthan).

February, which period constitutes the British "winter" according to the scheme of seasonal division adopted by agricultural and meteorological convention. Extensive use has also been made of information supplied by private observers and correspondents in parts of the country unrepresented by Air Ministry stations. To all these collaborators the writer would express his gratitude for their valuable help.

GENERAL CHARACTER OF THE SEASON.—Over the British Isles as a whole the 1939-40 winter was the coldest of the

twentieth century so far. How it compared with its two closest rivals is shown by Table I.

Table I. General mean temperature for the British Isles: negative departures from the average.

	Dec. °F.	Jan. °F.	Feb. °F.	Winter. °F.
1939-40 ...	2.0	7.7	2.1	4.0
1916-17 ...	2.5	3.6	4.1	3.4
1928-29 ...	0.6	2.9	4.6	2.6

Thus, although January, 1940, was by far the most severe month of the nine listed, the winter of 1916-17 surpassed those of both 1928-29 and 1939-40 for consistently low temperature, whereas the winter of 1928-29 was pre-eminent for steadily increasing rigour from month to month. It should be added that in 1917 excessive cold continued through March and April, the general mean temperatures of which were subnormal by about 3°F. and 4°F. respectively; in 1929, on the other hand, March was notably genial, its last week breaking all records for warmth so early in the year, and in 1940 March was milder than usual except in northern Scotland. Doubtless the fact that the 1916-17 winter proved more disastrous to bird-life than either the 1928-29 or the 1939-40 season may be attributed largely to the persistence of severe weather during the first two months of spring in 1917.

DISTRIBUTION OF THE COLD.—*Table II.* District values of the departure of mean temperature from the average for December, January and February, and for the whole winter: the minus sign indicates defect, the plus sign excess.

	Dec. °F.	Jan. °F.	Feb. °F.	Winter. °F.
Scotland, N.	—0.2	—4.8	—1.8	—2.3
Scotland, E.	—0.8	—6.7	—2.4	—3.3
England, N.E.	—0.8	—8.7	—4.0	—4.5
England, E.	—2.9	—8.7	—4.1	—5.3
Midlands	—2.0	—9.8	—3.5	—5.1
England, S.E.	—3.2	—8.6	—2.5	—4.8
Scotland, W., and Isle of Man	—1.1	—7.8	—2.3	—3.8
England, N.W. and Wales, N.	—1.8	—9.0	—2.9	—4.6
England, S.W. and Wales, S.	—2.9	—8.1	—0.7	—4.0
Ireland, N.	—2.3	—5.2	+0.7	—2.3
Ireland, S.	—2.5	—4.5	+1.2	—2.0
Channel Isles	—2.0	—4.8	+1.1	—2.0

It will be seen that as regards the winter as a whole there was a general increase in the intensity of the cold from west to east, the area worst affected comprising the Watsonian provinces Ouse, Trent and Thames. This happened also in 1916-17, 1928-29, and many previous hard winters. The explanation of the phenomenon is well known to meteorologists. Owing to the distribution of barometric pressure ordinarily prevalent during such seasons, the eastern half of our country derives its air supply much more consistently from Continental sources than does the western half, where comparatively warm "equatorial" winds associated with Atlantic cyclones always break through from time to time. Ireland and the far north of Scotland escaped relatively lightly in 1939-40, but the region least of all affected appears to have been the island district from the Outer Hebrides to Tiree. Here the season was little colder than usual—by only 0.7°F. at Stornoway. In Skye the winter is said to have been the finest within memory; the opening of the first crocus there was, according to Mr. Seton Gordon, the earliest known by at least ten days.

PERIODS OF MOST INTENSE COLD.—These were December 29th-31st, January 17th-23rd, February 9th-19th. *Table III* gives for each period the lowest air temperature "officially" registered in each of the twelve Watsonian provinces covering England and Wales, with the locality and date.

TABLE III.

Province.	*Period.* Dec. 29th-31st °F.	*Period.* Jan. 17th-23rd. °F.	*Period.* Feb. 9th-19th. °F.
1. Peninsula.	20, Bath, 30th.	2, Cullompton, 21st.	17, Bristol, 18th.
2. Channel.	10, S. Farnborough, 30th.	—6, Bodiam, 20th.	8, Marlborough, 18th.
3. Thames.	4, Rickmansworth, 30th.	—4, Canterbury, 20th.	6, Rickmansworth, 13th.
4. Ouse.	13, Luton, 30th.	3, Thetford, 20th.	9, Luton, 18th.
5. Severn.	6, Newport (Mon.), 29th.	—4, Newport & Hereford, 21st.	7, Bromyard, 18th.
6. S. Wales.	18, Rhayader, 29th.	—10, Rhayader, 21st.	11, Rhayader & Crickhowell, 18th.
7. N. Wales.	15, Sealand, 29th.	—4, Welshpool, 21st.	14, Bala, 18th.
8. Trent.	18, Leicester, 29th & 30th.	—1, Buxton, 21st.	11, Belper & Buxton, 18th

Province.	*Period.* Dec. 29th-31st. °F.	*Period.* Jan. 17th-23rd. °F.	*Period.* Feb. 9th-19th. °F.
9. Mersey.	8, Barton (Manchester), 29th.	0, Barton, 21st.	15, Barton, 18th.
10. Humber.	21, Castleton, 31st.	—2, Castleton, 21st.	2, Castleton, 16th.
11. Tyne.	17, Houghall (Durham), 29th.	—4, Houghall, 23rd.	10, Houghall, 16th.
12. Lakeland.	13, Burnley, 29th.	—6, Ambleside, 21st.	12, Newton Rigg, 16th.

Temperatures (in the " official " thermometer screen) at or below zero Fahrenheit, i.e., 32° of frost or more, were reported on at least one night between January 17th and January 23rd in the following counties : *England and Wales :* Sussex, Kent, Herts, Hereford, Worcester, Staffs, Salop, Monmouth, Radnor, Montgomery, Merioneth, Derby, Lancs, Yorks, Durham, Northumberland, Westmorland, Cumberland ; *Scotland :* Inverness, Aberdeen, Roxburgh, Renfrew, Kirkcudbright. The absolute minimum values for each country were : *England,* —6°F. at Bodiam (Sussex) on January 20th and at Ambleside (Cumberland) on January 21st ; *Wales,* —10°F. at Rhayader (Radnor) on January 21st ; *Scotland,* —5°F. at Dalwhinnie (Inverness) on January 17th ; *Ireland,* +10°F. at Newtownforbes (Longford) on January 18th. Over much (probably most) of England January was the coldest calendar month since February, 1895, and the coldest January since 1838. In many districts the frost on the night of January 19th-20th or January 20th-21st was keener than any hitherto registered. At Cullompton (Devon), for example, the minimum temperature of 2°F. on January 21st underpassed by a margin of 5°F. the previous low record of January 20th, 1881, while Canterbury's —4°F. on January 20th, 1940, is said not to have been matched there in 70 years.

The following were the lowest mean minimum temperatures registered for January, 1940 : Rickmansworth (Herts), 16.6°F. ; Thetford (Norfolk), 18.1°F. ; Balmoral (Aberdeen), 19.1°F. ; Braemar (Aberdeen), 19.4°F. ; Llandrindod Wells (Radnor), 19.4°F. At each of these places there was thus a nightly average of from 12½ to 15½ degrees of frost throughout the month. The lowest mean maximum temperatures were : Dalwhinnie (Inverness), 32.1°F. ; Buxton (Derby), 32.8°F. ; Renfrew, 32.9°F. ; Askham Bryan (Yorks), 32.9°F.

DISTRICTS ESCAPING SEVERE FROST.—The only official observing stations in Great Britain and Ireland at which the

air temperature did not go lower than 24°F. throughout the winter were: St. Mary's (Scilly Isles), extreme minimum 26°F. on January 18th; Skallary and Stornoway (Hebrides), extreme minimum in each instance 24°F. on January 17th.

SNOWFALLS AND SNOW-COVER.—The distribution of these was, as usual, very irregular. Locally in Ireland and also at a few coast towns in south-west England and South Wales the winter was almost free from snow. Elsewhere, it occurred on 20 to 25 days during the three months over a fairly wide area, and in some upland and far northern districts on more than 30 days (39 at Lerwick, in the Shetlands). In general, December and the first half of January brought no really large amounts, but thereafter depths of at least 12 in. were frequently reported. In parts of south-east Sussex the cover was 15 to 18 in. thick on January 17th. From January 26th to 29th blizzards which in various localities are said to have equalled the severity of any within memory swept over much of central and northern England. By the 29th the average depth of the snow-layer was approximately 2 ft. at Malvern and Sheffield, and little less in many other regions. During January and the first half of February numerous villages were "isolated" for several days, and some for much longer periods—ranging up to five weeks in the Wharfedale district of Yorkshire. In the upper reaches of the northern Chilterns the high easterly winds accompanying the storm of January 27th-29th raised drifts 15 ft. deep which did not finally disappear until March 17th. There was serious dislocation of rail and road traffic in many regions of central and northern England and south-western, central and eastern Scotland from mid-January to the third week of February.

ICE-STORMS.—From about January 25th to 29th many parts of England and Wales that escaped the blizzard which raged so widely at that time experienced an ice-storm (rain falling through frosty air near the ground from a warmer layer aloft) of very exceptional intensity for our country. This phenomenon is well described by one correspondent as "White Hell." The area affected appears to have extended from east Sussex via Middlesex and Herts to Cambridgeshire in the east to South Devon, Cardigan Bay and Cheshire in the west, but the region suffering most severely was that stretching from west Surrey through Hants, Wiltshire, Somerset and Gloucestershire into Warwicks, Worcestershire and central Wales. There the destruction of trees, telegraph and telephone poles and wires was on a scale probably without precedent

for England. The coating of ice had commonly from 50 to 100 times the weight of its thinner supporting media. Two instances of extraordinary accumulation may be cited: (1) Stanway (Glos, G. Charteris), North Cotswolds; "rushes, hedgerow shoots and saplings had ice covering 3 to 4 inches in diameter"; (2) Machynlleth (Montgomery, W. A. Cadman); "the thickness of ice-formation varied from 4 inches on the Kerry Hills [south of Newtown] to 2 inches in the Dovey area." In at least one Hampshire parish the incumbent was able to reach his church on Sunday, January 28th, only by crawling on hands and knees; here and there even this mode of progression seems to have proved ineffectual, for no services could be held. The effects of the main ice-storm lasted over an extensive area for a full week—until about February 3rd. On that day a repetition of the phenomenon on a much smaller scale heralded a slow thaw, which gave rise to serious flooding in numerous central, southern and western districts of England and some parts of Wales.

REGIONAL COMPARISONS WITH 1916-17 AND 1928-29.—Although, as stated above, the 1939-40 winter outstripped all its twenty-century forerunners for general severity over the British Isles, there were some regions in which conditions of greater rigour prevailed in either 1916-17 or 1928-29. Ireland as a whole and many south-western districts of England fared decidedly worse, as regards both persistence of cold and quantity of snow, in 1916-17 than in 1939-40. West of a line from Donegal Bay to the Isle of Wight the mean temperature over the entire period of five months from December, 1916, to April, 1917, was in most localities sub-normal to the extent of from 3°F. to 4½°F., while at Newquay (Cornwall) the deficiency reached 5°F. In the same area the corresponding negative departures over the three months December, 1939, to February, 1940, ranged generally from 2°F. to 4°F., not exceeding 2½°F. at Newquay. Much of Ireland was continuously under snow from January 25th to February 18th in 1917, and one of the worst Irish blizzards known swept over the country as late as the first week of April: in parts of Mayo the depth of the cover averaged 2 ft., with 15 ft. drifts. This extreme severity of weather in regions ordinarily used as retreats in hard winters by certain species of birds may well have been in no small measure responsible for the more serious destruction of bird-life in 1916-17 than in 1939-40.

East of a line from the mouth of the Humber to Portland Bill, and also in Ireland, there were no outstanding visitations

of snow during the winter of 1928-29. Over much of western England and Wales, however, falls were often heavy and locally on high ground enormous, as, for instance, about mid-February, when in a small tract on the south-eastern fringe of Dartmoor, west of Holne Chase, a snow-cover 6 ft. deep (undrifted) was laid down within 15 hours. Nothing at all comparable with this was reported anywhere during the 1939-40 winter.

Neither in 1916-17 nor in 1928-29 was the late-January ice-storm of 1940 rivalled as regards either intensity or extent, though the first two months of 1917 did produce several notable examples of the kindred phenomena of " glazed frost " and " silver thaw," which sometimes seriously hampered traffic by road and rail, and at the end of February in 1929 a true ice-storm of uncommon severity and duration occurred on Dartmoor and Exmoor.

SUNDRY PHENOMENA.—A notable feature of the winter was the extreme dullness of February. At York and Oxford, where records go back to 1881, and at Kew Observatory (London), where they are available from 1880 onwards, the duration of sunshine was the smallest yet registered for that month. York had 28 consecutive sunless days from January 24th to February 20th. At Oxford a run of 15 such days, from January 26th to February 9th, was the longest known there.

During January and the first fortnight of February most of the rivers in England were more or less ice-bound, and for a time parts of the Thames estuary, the Wash and Morecambe Bay were frozen over.

LIST OF OBSERVERS.

NOTE : For the sake of convenience this list, and records in a systematic list to follow, are arranged under counties grouped under the Watsonian provinces. All observers who sent in notes are included and it has not been found possible to distinguish between those who were able to make detailed observations and those who, for various reasons, could forward only brief notes.

PROVINCE I. PENINSULA. *Cornwall :* C. E. Hartley (West). *Devon :* D. Lack (Totnes), H. G. Hurrell (Wrangaton), W. Walmesley White (Budleigh Salterton). *Somerset :* E. W. Hendy (Porlock), S. Lewis (Cheddar), H. Tetley (North and South), H. H. Davis (Bristol), C. I. Evans (Glastonbury), H. Underwood (Street).

II. CHANNEL. *Wilts :* A. F. Smith (Swindon), G. Peirson (Marlborough), B. W. H. Coulson, Dauntrey's School (near Devizes), W. M. Congreve (near Salisbury). *Dorset :* G. Yeates (Sherborne). *Hants :* J. B. Watson (Solent and New Forest), R. E. and W. M. Moreau (Bournemouth and Channel), M. Portal (near Southampton), D. E.

Bucksey (Portsmouth), G. G. Pierce (Winchester and Romsey), A. H. Hall (Farnborough). *Sussex :* E. C. Arnold (Eastbourne), N. F. Ticehurst (S.E.).

III. THAMES. *Kent :* C. B. Ticehurst (Appledore), A. V. Stone (Folkestone), T. C. Gregory (Deal and East Kent), R. G. Finnis (Margate), B. B. Osmaston (Westgate), R. S. R. Fitter (High Halstow), J. R. Hale (Maidstone), R. Ware (Tunbridge Wells). *Surrey :* W. M. Crook (Dorking), E. MacAlister (Albury Downs), L. S. V. Venables (Thursley district), A. H. Meares (West), H. F. Witherby (Chobham), H. E. Pounds (Farleigh District). *Essex :* R. Sparrow with F. N. Adams (weather) (near Halstead). *Herts :* B. A. Carter (Chipperfield). *Middlesex :* G. Carmichael Low, London N.H.Soc. observers per R. S. R. Fitter (London). *Berks :* G. Brown (Newbury district). *Oxford :* W. B. Alexander, B. W. Tucker, L. S. V. Venables (Oxford). *Bucks :* E. J. M. Buxton (Aylesbury district), C. E. Martin (St. Leonards).

IV. OUSE. *Suffolk :* A. Mayall (S.E.), H. E. Jenner (Lowestoft) (in *Field,* April 27th, 1940, p. 669). *Norfolk :* J. Vincent (Hickling), A. Buxton (Horsey) (in *Norf. and N. Trans.* for 1939, pp. 102-105). B. B. Rivière (Woodbastwick). *Cambs:* P. H. T. Hartley (Barrington). *Beds :* (Nil). *Hunts :* C. F. Tebbutt (St. Neots), E. Peake (Huntingdon). *Northants :* (Nil).

V. SEVERN. *Gloucester :* H. Tetley (Bristol district), S. M. Butlin (near Stonehouse), G. Charteris (Stanway). *Hereford :* G. Charteris (Bridge Sollars), O. R. Owen (N.W.). *Worcester :* J. S. Elliott (Bewdley), A. J. Harthan (Evesham), F. Fincher (Bromsgrove). *Warwick :* H. G. Alexander (Birmingham district). *Staffs :* H. G. Alexander (Brewood district). *Salop :* O. R. Owen (S.E.), L. C. Lloyd, Caradoc Field Club (Shrewsbury district), J. H. Owen (N.W.).

VI. S. WALES. *S.E. Glamorgan and S.W. Monmouth :* J. E. Beckerlegge. *Brecon:* (Nil). *Radnor :* O. R. Owen (N.E. border), Sir C. Venables Llewelyn (Newbridge-on-Wye). *Montgomery :* J. H. Owen (N.E. border). *Carmarthen :* J. F. Thomas (Laugharne). *Pembroke :* R. M. Lockley (Skokholm), B. Lloyd (Tenby). *Cardigan :* (Nil).

VII. N. WALES. *Montgomery-Merioneth :* W. A. Cadman, E. H. T. Bible (Dovey). *Denbigh, Flint, Carnarvon and Anglesey :* (Nil).

VIII. TRENT. *Lincs :* J. S. Reeve (Leadenham). *Leicester :* D. S. Wilshere (Kirby Muxloe), E. A. G. Duffey (Leicester). *Rutland, Notts :* (Nil). *Derby :* W. K. Marshall (S.), K. Hollick (Ashbourne district), J. Armitage (Peak district).

IX. MERSEY. *Cheshire :* S. G. Smith (Gatley), W. Wilson, W. Griffiths (W. Kirkby). *Lancs :* E. Hardy (Merseyside Nat. Assoc.), S. Moorhouse (Morecambe Bay).

X. HUMBER. *Yorks :* R. Chislett (S.), A. Whitaker (Sheffield and Barnsley districts), J. C. S. Ellis (Bretton, near Huddersfield), H. B. Booth (Wharfedale), R. E. B. Yates (Sedburgh Orn. Soc.), A. Hazelwood (dead birds) ; also notes in *Naturalist.*

XI. TYNE. *Durham :* (Nil). *Northumberland :* G. W. Temperley (Newcastle district), H. Tully (Stocksfield).

XII. LAKELAND. *Westmorland :* J. A. G. Barnes (Arnside). *Cumberland :* (Nil). *Is. of Man :* K. Williamson, W. S. Cowin.

SCOTLAND. *Dumfries :* H. S. Gladstone, O. J. Pullen, J. M. McWilliam. *Dumbarton :* J. Bartholomew. *Inverness-shire :* D. Nethersole-Thompson. *Is. of Skye :* Seton Gordon.

IRELAND. *Antrim :* M. N. and D. H. Rankin. *Dublin :* Z. Hall, E. O'Mahony. *Carlow :* C. S. S. Ellison. *Kilkenny :* R. A. Houblon.

GENERAL EFFECTS ON BIRDS.

BIRDS FOUND DEAD.

As was to be expected not a great many small birds were reported as found dead. They get under cover and are difficult to see and under such conditions are soon snapped up by various mammals and other birds. Odd birds of a number of species were found dead and among these finches (especially Greenfinch and Chaffinch) were fairly widely reported, as were Robins, while in Westmorland even Goldcrests (4) were found. Quite a number of dead Sky-Larks were reported, notably at Winchester and on the tide-mark in Sussex. Many Starlings were found dead under eaves of thatched roofs in Bucks where they roosted. Song-Thrushes, Redwings and to a much less extent Blackbirds were found dead in many parts, but seldom in numbers, though in the Liverpool area over 20 Song-Thrushes were reported, and of Redwings 10 in that, many in Isle of Man, numbers at Bretton (Yorks) and 20 each near Lands End (Cornwall) and Totnes (Devon), while of Blackbirds, which did not suffer to the like extent, many were found in Shropshire, Merioneth, S. Yorks and at Torrance near Glasgow, where also two were seen to fall dead out of a hedge on January 23rd (temperature below zero the previous night). A good many Blackbirds found dead on this date at Torrance were in good condition, and some dead ones in Gloucester were also considered not to have died of starvation but of cold. Of other Passeres many Carrion-Crows found dead in the Dovey Valley (Merioneth) was perhaps the most unusual item in the reports.

Of other birds inland the greatest numbers reported dead were of Herons (10, Hunts; 10-12, Westmorland); of Wood-Pigeons, many Berks, Gloucester, Worcester, hundreds on Shropshire-Montgomery border, 50-60 Hereford, large numbers near Glasgow; of Snipe, many Winchester; of Moorhen, many Salop, 20 in 1 mile of canal near Bretton (S. Yorks); of Coots, scores Kent, 12 Staffs; of Red Grouse, many Merioneth, and of Partridge, many Hants, large numbers Shropshire and Montgomery border.

In some places on the coast a great many birds including some Passeres were found dead on the tide-line. In Carmarthenshire on a stretch of 6 miles between Laugharne and Pendine from January 25th to 27th Mr. J. F. Thomas found 22 species including 4 Redwings, 2 Herons, 1 White-fronted Goose, 8 Sheld-Ducks, 12 Oyster-catchers, 18 Redshanks, and 32 Curlews (also 13 inland). He states that from January 10th

to 23rd the shore became, with decreasing tides, a series of sheets of ice, separated by lines of washed-up ice and that the estuary mud became frozen an hour or so after the tide left it and that this probably accounted for the large number of waders and Sheld-Ducks killed.

Many Curlews were also found dead on the shore in Pembrokeshire and some in the Isle of Man, while Redshanks suffered badly, many dead being seen in the Dee Estuary (Cheshire), on the shore in the Isle of Man (30 in one day), a number on the Dublin coast about January 21st and 20-25 in S. Devon around January 30th.

In early February on the coast near Bridlington (Yorks) when many exhausted birds could be approached very nearly, numbers of dead birds were found including Common Scoters, Tufted Ducks, Herring- and Common Gulls besides many Razorbills, Guillemots and Puffins (G. H. Ainsworth and J. Lord, *Nat.*, 1940, pp. 135-6).

In the *Field* (April 27th, 1940, p. 669) Mr. H. E. Jenner gives a remarkable list of dead birds carefully counted by himself and friends between January 24th and March 12th on a stretch of 12 miles of the Suffolk coast. Thirty-seven species and 259 individuals are listed and it is stated that while there was a certain amount of oil pollution there was not more than in previous years. The larger numbers were 14 Scaups, 33 Common Scoters, 8 Red-throated Divers, 9 Curlews, 4 Redshanks, 14 Black-headed and 31 Common Gulls, 30 Razorbills, 51 Common Guillemots. There was also a Rough-legged Buzzard and one each Mute, Whooper and Bewick Swans. These deaths cannot, however, all be ascribed to the cold weather.

A curious tragedy was reported from Sanquhar (Dumfries) where "a large number of small birds," among them Starlings, took cover under a stationary car during a heavy snowstorm. The snow became so deep that the car could not be moved and the birds were unable to escape and perished (O. J. Pullen).

Icing of Plumage and Feet.

At Evesham (Worcester) on January 28th seven Wood-Pigeons were found stuck to boughs, their tails and flanks being held fast by ice, and many others incapable of flight were found in sprout-fields. A Chaffinch was completely embedded in ice attached to a laurel leaf and various small birds lost their tails, while a Chaffinch and Greenfinch had completely bald heads (A. J. Harthan). In Merionethshire Wood-Pigeons

were also reported as frozen to their roosting perches and a shepherd on Plynlimmon found a Buzzard with its feathers encased in ice; it could fly a few yards at a time (W. A. Cadman). At Stoner Hill (Hants) a Moorhen had its feathers so iced that it was caught and brought indoors and thawed (C. J. P. Cave, *Quart. Journ. R. Meteor. Soc.*, April, 1940, p. 146).

Greenfinches, Chaffinches, Blackbirds, Great Tit and especially Pheasants, are recorded by various observers, as having lost their tails and in Gloucestershire Pheasants and some other birds had their tails fixed at curious angles (G. Charteris).

Near Winchester many Blackbirds owing to icing were unable to spread their tails to "brake" and were seen on several occasions to mistime their landing and pitch forward into a hedge with outspread wings (G. G. Pierce).

At Marlborough a Jackdaw was so iced as to be incapable of flight and in the Dee Estuary (Cheshire) a Common Gull was found in frozen snow on the edge of the tide, but soon revived when the snow was removed from its feathers (W. Wilson).

In Shropshire on January 28th and 29th a number of Song-Thrushes, House-Sparrows and Starlings were suffering from injuries to their feet, and while most recovered in a short time, others appeared permanently crippled and later disappeared (L. C. Lloyd).

Readers may be reminded that under "Meteorological Observations" Gilbert White recounted under date January 20th (year not stated) that "Mr. H.'s man says that he caught this day, in a lane near Hackwood-park, many rooks, which, attempting to fly, fell from the trees with their wings frozen together by the sleet that froze as it fell. There were, he affirms, many dozen so disabled."

Unusual Feeding and Other Habits.

Birds in gardens, especially where food was put out, were not so badly affected as those in other places. In some parts there were quantities of windfall apples and many birds fed on them, but as these were frozen some (*e.g.*, Song-Thrush) seemed unable to peck into them (A. J. Harthan). There are a good many notes of unusual birds coming into gardens. Rooks are noted in a good many reports and even came to a window sill (Co. Carlow). In Radnor they completely monopolized the food put out on a garden bird-table, while Mr. T. Hyde-Parker recounts (*Nat.*, 1940, p. 151) how one alighted above a small bone hanging by a string and pulled

it up, placed a foot upon it, removed the string and flew off with the bone. Among other birds noted in gardens were Magpies, Jays, Reed-Buntings, Sky-Larks, Fieldfares and Redwings, while Wood-Pigeons visited the smallest gardens for greenstuff. Besides going to gardens in towns Sky-Larks appeared in the streets as they did in London and other places in December, 1938, and it may be noted that Gilbert White in his description of the severe frost and snow in January, 1776, remarks that "Sky-Larks settled in the streets of towns, because they saw the ground bare" (Letter LXII).

Many birds went to poultry and cattle feeding-places. Among others were Sky-Larks, Meadow-Pipits, Spotted Woodpeckers and Tree-Creeper at Evesham (Worcester). Root-crops were frequented by many species, often in large numbers. Small Passeres often fed on the shore and in Cheshire many Song-Thrushes were seen eating winkles (E. Hardy). In N. Shropshire a Rook searching under a bush emerged with the remains of a Hedge-Sparrow. Tits also fed on dead birds and Robins were several times seen to do so and even once a Hedge-Sparrow (J. H. Owen). Stomachs of Song-Thrushes and Blackbirds found dead in Liverpool contained horse-manure and short straws (E. Hardy).

At Horsey (Norfolk) Major A. Buxton found large numbers of Mallard and "enormous" flocks of Stock-Doves feeding on seeds of salt-loving plants and specially orach (*Atriplex patula*). Pink-footed Geese also fed on the orach seed.

In Dumfries a Heron was seen to swoop down on small birds feeding at cattle-troughs, seize one and swallow it.

Exhausted birds such as Redwings and Song-Thrushes could often be approached very nearly or picked up, and at Bridlington (Yorks) an Oyster-catcher only flew when touched and Common Gulls were picked up.

A pack of forty Red Grouse was seen feeding round a "potato pie" in the middle of a wood at Creskeld (Yorks) on February 18th, the nearest moor being eight miles away (B. Parkinson, *Field*, March 23rd, 1940, p. 461). They also appeared in Pheasant coverts in Merionethshire and came to feed with poultry in Dumfries-shire.

(*To be continued.*)