

Siphonaptera.

Records in the Counties of Cumberland, Westmorland,
Lancashire and Cheshire.

By H. BRITTEN, F.E.S.

HAVING collected specimens of fleas from the nests of various birds and animals in the four Northern Counties, I thought that a short account of the species taken, and the hosts on which they live, would prove interesting to many of our readers, and might possibly induce some to try and help in arriving at a more accurate knowledge of the species to be found in these counties. Material can be sent in to me in practically any condition, if the collector has not got any special spirit to put them in. Perhaps one of the best methods is to put the adult flea in a small tube or bottle filled with half water and half methylated spirit; this turns milky white, but does no harm to the specimens, and they are easily manipulated for determination from this medium.

They will travel quite well in a dry tube or bottle, but perhaps the best and easiest method is to send on the nests of birds and animals intact in a box, when they can be searched here for the fleas, and the larvæ can be reared to maturity when they are present. Several nests have been sent to me in this way and I have had fairly reasonable results.

House martins' nests at the present time should yield good results as several species of fleas infest the nest of this bird. The lining of the nest is all that need be sent.

A study of the various nests mentioned in the following notes on the species, will show where I have been successful, and anyone wishful to help cannot do better than send on the lining from any of the nests they may find.

The best method is to take the old nests and shake them out over a sheet of paper, putting the fine debris and dust into a tin box, each nest to be sent in a separate box. The coarse material can be thrown away, so that a large nest can be shaken out in this way, until it will go into quite a small box.

Bats are also infected with fleas peculiar to themselves, some of which are extremely interesting, and if anyone captures any of these little animals alive, they can be posted direct in a box. Where localities are given I have added the initial of the collectors where these are known; the Cumbrian and Westmorland records are all from my own notes. The only previous records I can trace are given by Bagnall (*Lancs. & Ches. Nat.*, Jan., 1919, pp. 263-264).

Pulex irritans, L.—This is the common flea of man, and is found practically everywhere. In fact it is often difficult to avoid its rather irritating attentions, and some amusing accounts could be related of midnight hunts with a candle and a piece of soap, when these disturbers of our slumbers have proved rather too attentive. I have also taken this species on the dog and it has been reported from the badger and the fox. There is no need to specify exact localities for this insect. It will be sufficient to say that it has been found wherever I have visited in the four counties.

Archæopsylla erinacei, Bouché.—This species is found on the hedgehog and is very difficult to capture on the animal itself as it runs with great rapidity and is not easy to dislodge from its spiny host.

Great Salkeld, Skirwith (Cumberland); Melkinthorpe (Westmorland); and Macclesfield district (H.B.), Rainow (F.N.).

Spilopsyllus cuniculi, Dale.—This is the species which is found so abundantly in the ears of rabbits and hares, and also in their nests, as well as about the mouth of the burrows of the first named. Another host on which I have found it not uncommonly, is the domestic cat where it also takes up its abode in the ears. There is no doubt that this is the result of the cat's habit of

hunting young rabbits and the flea has migrated from the rabbit to the cat while the latter has been dining on its original host. This will also no doubt explain the presence of this and many other species of fleas on stoats, weasels and foxes. I once found several examples in a starling's nest in a hollow tree. Here again probably rabbits lived at the base of the tree, and the fleas had moved up to the nest. One example was taken on a peewit killed by a peregrine hawk. I disturbed the hawk from its meal and examined the remains of the dead bird, when one was seen and captured. Another example was taken from a dead mole in a trap.

Great Salkeld, Skirwith, Barrock Park, Baron Wood, Melmerby, Edenhall (Cumberland); Melkinthorpe, Shap, Lowther (Westmorland); Ainsdale, Freshfield (Lancashire, Bagnall); Rainow (F.N.); Mouldsworth (Cheshire, H.B.).

Ceratophyllus gallinulæ, Dale.—One of the common bird fleas which appears to have no really definite host. I have taken it abundantly in robins' nests and also in blackbirds' nests.

Great Salkeld (Cumberland); Rainow (Cheshire, F.N.).

Ceratophyllus styx, Roths.—This species is usually found in the nests of sand-martins, but has also been taken in the nest of the dipper.

Great Salkeld (Cumberland).

Ceratophyllus hirundinis, Curt.—This is one of the species which inhabits the nest of the house-martin.

Great Salkeld (Cumberland).

Ceratophyllus garei, Roths.—The adult insects and larvæ are usually abundant in the nests of the hawk and other birds. Adults in swarms in nests of the pheasant, also very abundant in the nests of partridge. Adults and larvæ in a waterhen's nest, and the adults in a long-eared owl.

Great Salkeld (Cumberland). The sifted debris from a grouse nest from Hollingworth Moor, Mottram, Cheshire, brought to me by H. Halkyard, produced many examples.

Ceratophyllus gallinæ, Schrank.—This is the species which is usually so abundant with domestic poultry, but it also infects the nests of many other birds. My records are from domestic poultry in large numbers, adults and larvæ in a redstart's nest, in carrion crow's nest both adults and larvæ, tawny owls' nests in all stages, long-eared owls' nests abundant in adult and larval stages, and in blackbirds' nests.

Great Salkeld (Cumberland); Melkinthorpe (Westmorland); Lancaster (C.B.) from a swallow's nest, this (the only Lancashire record), I should say, was probably from the nest having been used by sparrows.

High Lane (H. Bury), a casual; Rainow (R.N.), in a sparrow's nest; Styal (F.W.B.), from a sparrow's nest, are the Cheshire records.

Ceratophyllus fringillæ, Walk.—This species is usually abundant in the nests of house-sparrows, and I once took it in large numbers in the nest of a carrion crow.

Great Salkeld, Wan Fell (Cumberland).

Ceratophyllus fasciatus, Bose.—This is one of the commonest of the small animal fleas, and I have taken it in large numbers in the nests and on the bodies of the mole, the brown rat, and the field vole, and also many examples on the bodies of stoats and weasels.

Great Salkeld (Cumberland); Howley, Warrington, on the brown rat.

Ceratophyllus sciurorum, Schrank.—This species is common in the nests and on the bodies of the squirrel and dormouse, and it occasionally strays on to several other animals. My records are abundant on squirrels, and in all stages in their nests, and on one occasion from the nest of a rabbit.

Great Salkeld (Cumberland); Melkinthorpe (Westmorland).

Ceratophyllus penicilliger, Grube.—The bank and field vole appear to be the true hosts of this species, though it has occurred with other animals. Field vole's nest, abundant in adult and larval stages. Weasel frequent.

Great Salkeld (Cumberland). Lancashire, bred from a field vole's nest sent in by Mr. W. H. Heathcote, from Longton, near Preston. There is also a record from the bank vole, Bowdon, Cheshire.

Ceratophyllus walkeri, Roths.—This is another species which appears to be partial to the nest and bodies of voles, though I have found a good many examples in moles' nests. They also occur on the bodies of the stoat and weasel.

Great Salkeld (Cumberland); Baguley (J.R.H.); Arden Hall, Woodley, Cheshire (H.B.), in vole's nests.

Ceratophyllus mustelæ, Dale.—Another of the species which appears to be partial to the nests and bodies of the small voles and field mice, though the only animal I have taken it on is the stoat.

Great Salkeld (Cumberland).

Ctenophthalmus agyrtes, Heller.—Another of the very common animal fleas and one which may be found on practically all our smaller animals. Field voles' nests, common. Brown rats, abundant on the animals and in all stages in their nests. Moles, both on their bodies and in their nests. In the nest of a rabbit and commonly on the bodies of the stoat and weasel. Once on the body of a young fox cub.

Great Salkeld, Wan Fell (Cumberland); Hedgehog's nest, Melkinthorpe (Westmorland). Lancashire records are, Silverdale (Bagnall), in a mole's nest. Ashton Moss (W.P.), mole's nest. Cringle Fields, Manchester (H.B.), in a water-vole's nest. Cheshire records are Baguley (J.R.H.), Appleton, woodmouse; Macclesfield district (H.B.), in a hedgehog's nest, Rainow (F.N.), on water-shrew.

Rhadinopsylla pentacanthus, Roths.—My only records of this flea are from the stoat and weasel, Great Salkeld (Cumberland).

Doratopsylla dasycnemus, Roths.—The host of this species is said to be the common shrew, but my examples are from the brown rat, Great Salkeld (Cumberland).

Palæopsylla minor, Dale.—This species is abundant on the mole and also in the nests of this small animal.

Great Salkeld (Cumberland). Silverdale (Lancashire, Bagnall), mole's nest. Cheshire record, Wistaston, near Crewe (W.L.).

Leptopsylla musculi, Dugis.—This handsome little flea is usually abundant on the house mouse, and also in its nests. Levenshulme and Oxford Road, Manchester, are my only records.

Leptopsylla spectabilis, Roths.—I have only met with this little species on the stoat, at Great Salkeld (Cumberland).

Hystrihopsylla talpæ, Curt.—This giant among the fleas is usually abundant on moles and its larvæ equally abundant in the nests of this animal. The adult has also been found on several other animals, but I have never seen the larvæ in any other nest. My records read: mole's nest, abundant in all stages; waterhen's nest, a number of examples. What these were doing in this nest in the centre of a pond I cannot say, as the nearest point at which a mole could be found would be at least a mile away. Wasp's nest, another very curious situation for an animal flea, but one which could probably be accounted for by the presence of mice in the nest eating the combs, and moles were not uncommon quite near to this nest.

Great Salkeld (Cumberland); Hedgehog's nest, Melkinthorpe, (Westmorland). Lancashire records are Silverdale (Bagnall), mole's nest; Ashton Moss (W.P.), mole's nest. Cheshire records are Baguley (J.R.H.), and Rainow (F.N.).

Ischnopsyllus simplex, Roths.—This species is supposed to occur on Natterer's bat, but there is no name given to the bats in the only record from Randa-pike, Windermere, Lancashire, J. F. Cormack (Bagnall, *loc. cit.*).

Ischnopsyllus hexactenus, Roths.—This species is usually plentiful on the long-eared bat, and the larvæ of this and other bat fleas can often be found among the droppings of these animals in their roosting places, so that debris swept from these situations and placed in a tin would probably be one of the best methods of collecting these very handsome and interesting parasites.