

'ANTING' BY BIRDS

BY W. L. MCATEE

THE German equivalent of the word 'anting' was proposed by E. Stresemann in 1935 (1935b) to cover not only 'bathing' in ant nests or swarms, dressing the plumage with crushed ants, and placing ants among the feathers, but also all apparent substitutes for these actions. In the present writer's opinion the term should be restricted to phenomena involving ants, for the sake of logic, appropriateness, and due conservatism. We scarcely understand any of the matters involved but we can be sure that birds do not put among their feathers active, acid-secreting, and biting and stinging ants for the same purpose as quiescent, bland, and inoffensive snails.

Stresemann's compilations have been commented upon in India (Ali, 1936) and Great Britain (Jourdain, 1935) but not in America, nor have the published American instances been included in any of the prior discussions. They involve three additional species of birds and all are earlier than any of the records for other lands. One of them by Abbott M. Frazar (1876) has considerable priority over any other published observation that has come to notice.

The writer has referred to the matter in two previous publications (1914, 1918) but has never had the good fortune to make a personal observation of 'anting.' His interest was greatly renewed when E. R. Kalmbach had such an opportunity in 1935 and told him about it. Believing that personal experience gives much needed validity to discussions that are necessarily chiefly compiled, he urged Kalmbach to write on the subject and turned over to him all available references. So much of Kalmbach's time was required for extended official field investigations and the preparation of reports upon them that he returned the material to the writer for compilation. The account of his own observation is as follows:

"At Washington, D. C., about 3.00 p. m., November 11, 1935, I observed a small group of Starlings feeding on the lawn to the east of the U. S. National Museum. After watching them for a moment or two, it was noted that they were performing in a most unusual manner. The birds, two to four in number, seemed to be attracted to a particular spot in the lawn, to which they repeatedly returned when flushed.

"They were observed picking up small objects from this circumscribed area about two feet in diameter, and then, standing rather erect, appeared to place these objects beneath their slightly raised wings. The tucking of these objects beneath their wings was a rapid procedure and there was no indication of any preening action. The tip of the bill was placed sometimes on one side and sometimes on the other, at a point near the posterior edge

of the secondaries. I could not detect whether the objects were being deposited on the wing itself or among the feathers on the sides of the rump.

"After watching the performance for as much as three or four minutes, in the course of which the birds were flushed several times by passersby, I went to this area and there found an active colony of ants, specimens from which were later identified as *Lasius interjectus* Mayr, by R. A. Cushman.

"Although no Starlings were collected, it is my conviction that they were picking up these ants and placing them in their plumage as described. There were other Starlings in the same general vicinity but only at this one spot, the site of the ant colony, did the birds perform in the manner described.

"It was later learned that this species of ant is aphidicolous and feeds largely on honey-dew. It is not considered predaceous, a fact that would lessen the validity of the theory that birds place ants in their plumage so they may feed on ectoparasites. I have also been informed that the excretions of this species contain citric rather than formic acid as a principal constituent, a fact that was clearly evident to anyone passing near the irritated colony of ants."

This new observation is the only one cited here in full. Rather than repeat or paraphrase others in the text, they are presented in the form of annotations to the bibliography. This plan enables the reader to learn what each author had to say about anting and cognate phenomena and their biological significance. On analyzing the literature, it is apparent that we have to deal with a variety of observations and with conclusions drawn from them that are almost as numerous as the observations themselves. In arranging these in logical sequence it seems legitimate to begin with the simple use of ant hills as dusting places, as in this action birds only take advantage of a widely available opportunity, and there are no implications as to any extension of the basic principle. By contrast, mere quiet sitting on an ant nest to allow the ants to remove parasites, or for "enjoyment," seems to imply to some degree "knowing what it is all about." Along such lines records of the impressions of observers are here arranged in a series having to do first with anting, then with supposed substitutes, and finally with what has been taken to be intentional transportation of food supplies. (Anting itself has also been interpreted in this sense.)

ANTING

Frequenting ant nests (or swarms)

For dust bathing; no deductions. Wright (1909); Detmers (in Heinroth, 1911b); Ringleben (1935).

For sprinkling with formic acid to expel ectoparasites. Floericke (1911); Heine (1929); Robien (1935).

To permit ants to remove ectoparasites. Frazar (1876).

For enjoyment. Troschütz (1935).

Dressing feathers with ant juices

Supposedly with secretions of ants that are picked up and dropped. Anon. (in Chisholm, 1935).

With crushed ants. Troschütz (1935).

With crushed ants which are then eaten; for external effect—deterrent to ectoparasites; for internal effect—stimulation, or the expelling of endoparasites. Ali (1936).

Dressing feathers with living ants

No deductions. Gengler (1925).

To drive out vermin. Heinroth (1911a); Funke (1912).

For agreeable effect of formic acid. Troschütz (1931).

Placing ants among feathers

No deductions. Detmers (in Heinroth, 1911b); Monerieff (1935).

To profit by insecticidal action of their secretions. Floericke (1911); Chisholm (1935); Hampe (1935); Kalmbach (in this paper).

As a means of food transportation. Ellicott (1908).

Cognate (?) phenomena, not anting

Dressing feathers with beer, lemon flesh, lemon juice, orange juice, vinegar. Hampe (1935).

Dressing feathers with cigar stumps. Heinroth (1911a).

Dressing feathers with amphipods. Braun (1924).

Dressing feathers with mealworms. Neunzig (in Heinroth, 1911b).

Placing "insects" among feathers

For enjoyment of their crawling about. Kleinschmidt (1935).

As a means of food transportation. Anon. (in Monerieff, 1935).

Having snails among feathers during migration

No deductions. Ramsden (1914).

As a food supply. Beyer (in McAtee, 1914).

As to the purport of anting and other behavior here noted, it is manifest that we have to do largely with inferences. Observations of fact are those of Frazar (1876) who states that ants were seen to seize parasites and bear them away; of Abdulali (in Ali, 1936) who observed that the ants were eaten; and of Beyer (in McAtee, 1914) who reports finding the same kind of snails in the stomachs of newly arrived migrants as were carried among their feathers. A trait of ants stressed by McAtee (1918) but not mentioned by any of the other writers here cited, is their tendency, when disturbed, to seize upon the nearest available object with the jaws in a grip so persistent that often the insect dies without relaxing it. So far as it goes, this fact gives support to the food-transportation hypothesis, which seems far more than a hypothesis in the Beyer observation. The phenomena involved in anting and the other actions of birds here noted are both remarkable and obscure, and whether we shall ever understand their exact significance is doubtful.

A list follows of the birds thus far observed to share in true 'anting.' All are Passeres; the absence of woodpeckers (outside of that order) is notable as these birds are rather closely associated with ants and feed freely upon

them. The argument might be advanced that woodpeckers, as a result of their diet, may be reeking with ant secretions and thus obtain whatever advantages there may be in that state, but the same argument should apply in the case of thrushes, also hearty consumers of ants, but which are reported as quite prone to anting.

CORVIDAE

Corvus corone
Corvus cornix
Corvus brachyrhynchos
Pica pica
Garrulus glandarius
Cyanocitta cristata

TIMELIIDAE

Leiothrix lutea
Lioptila capistrata
Chloropsis jerdoni
Chloropsis sp.

CINCLIDAE

Cinclus cinclus

TURDIDAE

Turdus musicus
Turdus iliacus

STURNIDAE

Sturnus vulgaris
Acridotheres tristis

COMPSOPTHYPIDAE

Vermivora pinus

ABSTRACTS OF LITERATURE CITED

ALI, SALIM

1936. Do birds employ ants to rid themselves of ectoparasites? Journ. Bombay Nat. Hist. Soc., **38**(3), April, pp. 628-631.

Record by Humayun Abdulali of *Chloropsis jerdoni* crushing ants (*Oecophylla smaragdina*) and rubbing them into the tail feathers before eating them. Review of the cases of anting compiled by Stresemann (1935a, b). [Comment]: Protective-adaptation theorists would say that the *Chloropsis* was doing away with some of the formic acid, which taken internally would be harmful to the birds. Ali notes, however, that this acid is used in human medication "to give tone to the muscles, increase muscular energy, and abolish the sense of fatigue," and may be similarly useful to birds, or possibly also in expelling endoparasites.

BRAUN, HANS

1924. Aus der Vogelstube. Verh. Ornith. Gesell. Bayern, **16**(1), June, p. 43.

A Dipper (*Cinclus c. meridionalis*) reared in captivity was many times observed to take an amphipod in its bill and rub it in its wing feathers.

CHISHOLM, ALEC H.

1935. Bird wonders of Australia, pp. 153-155.

Report of one observer that Starlings place ants under their wings, of another that "starlings, jays, etc." do the same "and after a while take them out again," and of a third that Indian Mynas in Australia pick up ants, shake and drop them, and wipe their bills beneath their wings. The compiler concludes that these acts have relation to parasites and that the birds "must be able to discriminate between the stinging and the spraying types of ants."

[DRAKE, JOHN N.]

1889. [Parasites among woodpecker feathers (Proc. Linn. Soc. N. Y., Nov. 30, 1888).] The Auk, **6**(2), April, p. 198.

Drake mentioned finding parasites resembling grains of rice among the

feathers of eight specimens of Red-headed Woodpeckers taken by him in Sullivan Co., New York. Query: Could these have been ant pupae? The description fits so far as it goes. This observation is not further referred to in the present paper.

ELLCOTT, GRACE

1908. Note on the food of Blue Jay. *Guide to Nature*, 1(5), August, p. 168.
A Blue Jay at Newcastle, Indiana, observed to seize numerous ants and deposit them among the feathers back of and underneath the wings, possibly by way of food transportation.

FLOERICKE, K.

1911. Eine merkwürdige Beobachtung an Staren. *Mitteilungen über die Vogelwelt*, p. 219 (reference from Gerber, 1935).
A pair of Starlings fairly buried themselves in an ant nest, and threw the ants over their feathers with every sign of enjoyment. The birds were also seen to use the beak in placing ants under the feathers where the action of the formic acid would be effective.

FRAZAR, ABBOTT M.

1876. Intelligence of a Crow. *Bull. Nuttall Ornith. Club*, 1(2), July, p. 76.
A tame Crow "deliberately takes his stand upon an ant-mound and permits the ants to crawl over him and carry away the troublesome vermin." Ants seen to seize the parasites and bear them away.

FUNKE, DR.

1912. [Magpie anting.] *Mitteilungen über die Vogelwelt*, p. 16 (reference from Gerber, 1935).
A tame Magpie was often observed, after its morning bath, to take several ants in its bill and stroke the feathers beneath the wing and on the rump. The behavior of this bird as well as that recorded for the Starling seems to indicate, not so much enjoyment of the skin-prickling sensation and the strong 'perfuming', or a certain esthetic requirement, but rather the practical objective of driving out annoying vermin by means of the formic acid.

GEBHARDT, E.

1935. [Quotation from Gengler, 1925, q. v.] *Ornith. Monatsber.*, 43(5), Sept.-Oct., pp. 135-136.
No original remarks.

GENGLER, J.

1925. *Die Vogelwelt Mittelfrankens. Verh. Ornith. Gesell. Bayern*, 16 (Sonderheft), p. 359.
Starlings in an aviary repeatedly took in their beaks from an ant nest given them, one to several ants at a time and passed them through the wing and back feathers as if to besmear or anoint them. Other insects were not observed to be so used.

GERBER, ROBERT

1935. [Quotations from Floericke, 1911, and Funke, 1912, q. v.] *Ornith. Monatsber.*, 43(5), Sept.-Oct., p. 135.
No original remarks.

HAMPE, HELMUT

1935. [Starlings anting; Starlings and jays liking acid baths.] *Ornith. Monatsber.*, 43(5), Sept.-Oct., pp. 137-138.
Starlings "artificially" reared, inserted ants among the feathers at every

opportunity. Also they eagerly dressed their feathers with lemon flesh, lemon juice, vinegar and beer. They were always keen to find a vessel in which salad had been prepared with vinegar and to bathe in it. A tame jay behaved similarly; every time an orange was peeled this bird came near to intercept the spurting sap, at the same time going through the motions of bathing.

HEINE, H.

1929. Krahen benutzen Ameisen zum Vertreiben von Auszen-parasiten. Ornith. Monatsber., **37**(6), Nov.-Dec., pp. 188-189.

Hooded Crows dusting in a colony of *Formica rufa*; the ant hill was torn apart and the place smelled strongly of formic acid. Assumes that the crows sprinkled themselves with formic acid to rid themselves of parasites. The action is not to be explained as instinctive but rather as the result of experience.

HEINROTH, O.

1911a. Deutsche Ornithologische Gesellschaft, Bericht über die November-sitzung 1910. Journ. f. Ornith., **59**, p. 172.

A tame Magpie eagerly rubbed its feathers with cigar stumps. Starlings do the same with living ants. A young Dipper, at its first experience with ants, seized one after another in its beak and passed them through its wing, back and leg feathers. Birds probably find the formic acid useful in expelling vermin, but as an inexperienced young bird, free of parasites, was observed anting, the action seems to be purely instinctive.

HEINROTH, O.

1911b. Deutsche Ornithologische Gesellschaft, Bericht über Dezember-sitzung 1910. Journ. f. Ornith., **59**, pp. 350-351.

Herr Detmers remarked that he had observed crows not only inserting ants among their feathers but also dusting in ant hills. Herr Neunzig had seen *Leiothrix* and different species of *Garrulax* rub their feathers with mealworms.

JOURDAIN, F. C. R.

1935. Miscellanea ornithologica et oologica. The use of living ants by birds against parasites. Oologists' Record, **15**(4), December, p. 79.

Abstract of articles by E. Stresemann (1935a, b).

KLEINSCHMIDT, O.

1935. [Quotations from Heinroth, 1911a, 1911b, q. v.] Ornith. Monatsber., **43**(5), Sept.-Oct., p. 134.

Asks whether birds enjoy the crawling of the insects in the feathers as the crow does twiddling of the fingers in its neck feathers.

McATEE, W. L.

1914. Birds transporting food supplies. The Auk, **36**(3), July, pp. 404-405.

Refers to the Ellicott and Ramsden notes (q. v.) and quotes from a letter by G. E. Beyer on the finding of numerous small snails of the genus *Physa* under the wings and also in the stomachs of newly arrived migrant Upland Plovers.

McATEE, W. L.

1918. The biting powers of ants. Amer. Mus. Journ., **18**(2), February, pp. 141-147, 1 pl.

Cites the Ellicott case (q. v.).

MONCRIEFF, PERRINE

1935. Relation of birds and insects. The Emu, **34**(3), January, p. 248.
The behavior of Starlings in placing ants under their wings has been known to him for years, and he was told by an English observer that birds of this species in autumn store insects under their wings in order, according to the observer's belief, to have food with them during migration.

RAMSDEN, CHAS. T.

1914. The Bobolink (*Dolichonyx oryzivorus*) as a conveyer of Mollusca. The Auk, **36**(2), April, p. 250.
As an unusual occurrence, spring migrants, which, as a rule, pass over, stopped at Guantanamo, Cuba. Live mollusks found among the feathers of some of the birds collected were *Succinea riisei* known from St. Croix and Puerto Rico but not from Cuba.

RINGLEBEN, HERBERT

1935. [Various birds anting; quotation from Troschütz, q. v.] Ornith. Monatsber., **43**(5), Sept.-Oct., p. 136.
As often as it had opportunity, a tame Carrion Crow 'bathed' in ant hills thoroughly and with evident pleasure. One 'bath' continued 25 minutes after which the bird was for some time obviously weary. Similar observations were made on *Chloropsis* species and on the Song Thrush and Red-wing Thrush in the aviary of A. Troschütz.

ROBIEN, PAUL

1935. [Jays anting.] Ornith. Monatsber., **43**(5), Sept.-Oct., p. 137.
Two tame but free-flying *Garrulus glandarius* took ant baths whenever an ant nest was laid bare in farm work. By treading on the place the ants were greatly excited and their spurtings copiously showered the feathers of the birds. The jays continued turning about and even wallowing, up to fifteen minutes at a time. Often they erected the tail and sat down, only the next moment to be turning on the shoulder. Ants that crawled up were thrown off. After the acid bath the jays flew away and shook and preened themselves as after a water bath.

STRESEMANN, E.

- 1935a. Werden Ameisen durch Vögel zum Vertreiben von Auszenparasiten venützt? Ornith. Monatsber., **43**(4), July-Aug., pp. 114-115.
Calls attention to Chisholm's Starling record (q. v.) and Heine's note of 1929 and asks for records of other observations.

STRESEMANN, E.

- 1935b. Die Benutzung von Ameisen zur Gefiederpflege. Ornith. Monatsber., **43**(5), Sept.-Oct., pp. 134-138.
Review of published notes and observations (separately cited in the present bibliography) and conclusions of the compiler. Birds of several families are known at times to react similarly to the presence of ants; sometimes they react in much the same way also to substitutes of suggestively similar form or possessing acid juices. So widespread a phenomenon must have biological significance and the reasonable conclusion is that it is for relief from external parasites. Research probably will clarify the matter. A term is proposed for the behavior which may be anglicised as 'anting'.

TROSCHÜTZ, ALFRED

1931. Bunte Bilder aus der Vogelstube. Die gefiederte Welt, **60**(41), Oct. 8, p. 484.

A peculiarity which certain exotic birds and the Redwing Thrush have in common is the use of living ants for anointing the legs, rump, and wings. This is done with amazing devotion, eagerness, and persistence. The formic acid must have an especially agreeable effect.

TROSCHÜTZ, ALFRED

1935. [Various birds anting.] *Ornith. Monatsber.*, **43**(5), Sept.-Oct., p. 137.

Leiothrix lutea, *Lioptila capistrata*, Redwing Thrush, and Song Thrush seize living ants, crush them in the beak and rub them on their legs; on the rump also by the Song Thrush. The Redwing stationed itself among the swarming ants and apparently enjoyed so doing.

WRIGHT, HORACE W.

1909. A nesting of the Blue-winged Warbler in Massachusetts. *The Auk*, **26** (4), October, pp. 337-345.

The warbler observed taking a dust bath in a "black ant hill" (p. 340).

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