

BIRD-PARASITE STUDY AND AVIAN RESEARCH

By AUSTIN L. RAND
CURATOR OF BIRDS

The entomologist shown in the photograph picking lice off a bird skin is a graduate student of the University of Chicago, Ronald Ward. The ornithologist looking on is Emmet R. Blake, our Associate Curator of Birds, who has just taken the bird skins out of the case where they are filed in the Museum.

The insects in which Mr. Ward is interested are Mallophaga. (Mallophaga, pro-



COLLABORATION IN RESEARCH

Emmet R. Blake (left), Associate Curator of Birds, and Ronald Ward, University of Chicago graduate student, work out problems of bird parasites.

nounced mal-lof'-a-ga, is a more exact as well as a more euphonious name for what some people call bird lice.) Mallophaga live chiefly amongst the feathers of living birds, eating feathers and dermal scales and apparently doing the birds little harm. When the bird dies, the Mallophaga die too and may remain on the dead bird.

To collect Mallophaga for study one must first, of course, catch the birds. This is where the Division of Birds assumes importance for the Mallophaga expert. We have already collected birds, more than 200,000 specimens, and have filed them in our steel cases for study. On some of these specimens there are still Mallophaga that infested the birds when they were alive. An interesting point here is that recently a new species of Mallophaga was removed from a specimen of a passenger pigeon and described many years after the bird was extinct.

Our collection has proved to be a fruitful hunting ground for Mr. Ward. He uses tweezers and brush for removing the insects and a magnifying glass for examining these little parasites, many of which may be as small as one-twenty-fifth of an inch. His prizes he files in vials of alcohol for study.

A record is kept of just where each specimen is found on the bird. Though the habitat formed by the warm close cover of the bird's feathers might be thought to be uniform from the view of an insect living in it, it has been found that certain Mallophaga may live only on one part of the bird, the neck for example, and another species perhaps under the wings. This needs to be checked. This is an elementary ecological study, comparable to mapping the distribution of birds in a forest where some species live in the tree tops, others in the undergrowth, and so on.

An expert, looking at specimens of Mallophaga, can sometimes tell what part of the bird they came from. For instance, short, broad ones live on the neck; long, narrow ones on the wings. This is adaptive modification to fit the insect to its life in the particular part of the bird's plumage it inhabits.

SYSTEMATIC RELATIONSHIPS

The classification of the various species of Mallophaga has a bearing on the classification of birds. The generations of Mallophaga pass from parent bird to young bird. There is little chance for the Mallophaga parasitic on one species of bird to pass to another bird species. In the cozy isolation of its feathery host, the Mallophaga are differentiated. Those on each kind of bird have the chance to become a different species. As the birds speciate, the Mallophaga may do the same. One would expect the most closely related birds to have the most closely related Mallophaga on them, while more distantly related birds would be expected to have Mallophaga that showed less relationship.

There is evidence that this is sometimes the case. Thus, when the systematic relationships of a group of birds are in doubt, as in the case of the jacanas that show relationships to the shore-bird order and the rail order, or the flamingoes that have been considered related to the ducks and also to the herons and storks, the Mallophaga may furnish an additional bit of evidence. This can be taken along with the characters of the habits, the eggs, the nest, the young, the plumage, the bone, and the tissue of the bird. These are all weighed together, and the bulk of the evidence determines the final conclusion.

The entomologist's primary object may be the taxonomy of the Mallophaga. The ornithologist's interest in getting together his collection is avian taxonomy. But both come together in the Museum, helping each other. Working together they build better and higher than can either alone.

To the true scientist, there is no natural object unimportant or trifling. From the least of Nature's work he may learn the greatest lessons.

—Sir John Herschel

EARTH HISTORY HALL—

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Seaweeds are present in most of the groups, though they are generally not recognizable in collections of fossils, where they are represented by rather shapeless black marks. In the group shown here, Mr. Marchand has used his artistic license to produce a dramatic seaweed giving a strong, dynamic effect to the whole composition. It is a proper accessory for the slender ammonites swooping greedily upon the sluggish mollusks below.

The ten habitat groups and the 43 other cases cover the subject of geologic history as disclosed by the fossil plants and invertebrates with a completeness not previously attempted. The hall, as the public will see it after October 1, is probably the most elegant and extensive display yet given to its subject.

The new exhibits include 1,339 specimens. Though we neglected to count the specimens in the old cases, it is apparent from a contemporary photograph that several of the individual cases must have contained more than that number of specimens. Thus the new exhibits achieve spaciousness. This is seen also in the arrangement of the cases. The 36 cases of fossils and 39 cases of ores formerly seen in Hall 37, a total of 75, have been replaced by 53 newly built cases. The increased use of the Museum by guided groups dictated the wider spacing.

Besides introducing space, we have added color in backgrounds as well as specimens. Suiting the generally marine environment of the fossils, the backgrounds of the exhibits are blue or green. Specimens are invisibly fastened to the background, and essential information about them is given in raised letters of a different color. The letters were first laid out in the form of the words to be used, and then sprayed with artists' color by a Geology Department preparator, and each one was then individually glued in place to make the headings and labels. Except for pink and black, every color has been used on the 60,000 letters.

The specimens and the letters are not the only things occupying the 2,325 square feet of case area. There are 46 original oil paintings by John Conrad Hansen, 34 painted maps and 43 drawings, mostly by Mr. Hansen, 24 diagrams, and 86 models. The diagrams, several of them the full size of a case and serving as background for fossils, are principally the work of Harry Changnon, Curator of Geology Exhibits. Models of animals were made by Joseph B. Krstolich, Department of Zoology sculptor, and plant models by Emil Sella, Curator of Exhibits in the Department of Botany. Keys to the models in the groups are furnished by small paintings made by Miss Laura Sparks. Preparators Henry Horback and Henry U. Taylor also contributed their talents to preparation of the hall.



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