In summer, shallow drinking pools, bird baths, and fountains are attractive to birds. Bird baths should preferably be placed in the shade, with no cover immediately about them to hide the approach of cats, which soon learn where the birds congregate.

To attract wild fowl, a pool, lake, or stream is necessary, but these may be made more attractive by propagating various species of wild water-plants which are eaten by such birds. Grouse are best attracted by feeding them in winter and protecting them against enemies. Nesting places, nesting material, bird-houses, and bird sleeping-places are also discussed.

Each family or group of birds has certain preferences of habitat and certain favorite foods, and Mr. Forbush gives special notes on the fancies and foibles of about forty of the more common species which are susceptible to human attentions, and the whole will repay the study of any person who enjoys the presence of birds around his home. Many of the devices and hints described, would be useful to teachers of nature study or manual training in schools where the pupils are encouraged in the building and setting up of bird-houses and refuges.

R. M. ANDERSON.

"POSITION TERRIFIANTE" DES ANIMAUX. *Siedlecki, Michel, 1919.** Comptes Rendus, Societe de Biologie. Tome LXXXII, No. 2.

It is a well known fact that when certain animals are suddenly surprised by their enemies or by passers-by which appear dangerous, they assume extraordinary positions, which are most often called positions of combat or terrifying positions. The best common examples are those of the cat pursued by a dog, or of the corba raising up and spreading its neck. Savants have considered this attitude as a voluntary conscious action.

The object of this attitude would be to protect. Weismann mentions, *Chaerocampa elpenor*, a caterpillar, which he believes frightens the animals which prey on it.

My idea concerning these attitudes is that they accord with the generally admitted theories.

Certain animals such as the large spiders, *Selenocosmia javanica*, or the scorpions, *Heterometrus javanicus*, when they put themselves in a terrifying position present their weapons of offence (chelicerae or venomous hooks) they place them in an easy position for attack.

Other animals behave in a totally different manner. The corba in striking its prey does not lift itself up or swell its neck. The brown mantis, *Deroplatys desiccata*, when it sees a lizard spreads its wings and lifts up its anterior legs, but when it is about to capture its prey the wings remain closed and the pincer-legs are folded on the thorax.

The European mantids when they are about to fight among themselves seldom assume the terrifying position (Fabre).

The terrifying position is most often without value as a means of defence. We have seen a large lizard, *Gecko verticillatus*, devour a mantid without hesitation, which had assumed a terrifying position. We have also seen a mantid which was catching a caterpillar, *Papilio demolion*, assuming a position which resembled closely that of *Chaerocampa elpenor*, studied by Weismann.

Often this terrifying attitude is assumed even when the animal is not in danger. We have seen a mantis, *Mantis laticollis*, assume a terrifying position the minute that we lightly jarred the cage in which the animal was held captive. On the contrary, a mantis placed with a scorpion in a large container defended itself in vain with its strong anterior legs, but did not assume the attitude which is called combative.

One of the most interesting things concerning an animal which assumes a terrifying position appears to be the relation which fatigue bears to this phenomenon.

NOTE.—The first time we noticed the connection between the terrifying position and that of fatigue was exemplified by a large lizard, *Varanus salvator*, 1m40 in length, which had been brought to us in a basket by a Malayan coolie. The animal was very weak and made no resistance when we placed it in a basin. For three days he was kept there without food; and did not move when touched with a stick. He was taken out of the basin to be chloroformed, but at the moment when the laboratory helper was putting a sack over his head with the chloroform, the animal suddenly assumed a terrifying aspect. The anterior feet were lifted up, its throat swelled, its mouth was open, showing rows of teeth, the tail was lifted up rigid ready to strike and the position it assumed was certainly imposing. But despite all this, the animal was in so feeble a condition that there was no difficulty experienced in capturing him.

The same animals, which in a full state of vigor do not assume the terrifying attitude, make use of it as soon as they become weak. We have observed the females of the large yellow spiders, *Platythomisus octomaculatus*, which after they had laid their eggs and had constructed their large cocoons upon which they rested; it was then only necessary to approach them to immediately provoke the terrifying position. Resting firmly on the cocoon with the four posterior legs, the animal extended its anterior extremities and produced with these an oscillatory movement of such rapidity that they became nearly invisible. The

*Translated by S. Hadwen.

spider resembled somewhat an enormous wasp; but far from being dangerous, she had become completely weak and impotent. Before egg-laying these females never assume the terrifying position, and it is only after egg-laying, when the organism has becomed weakened by the immense drain on its materials, that this bizarre position becomes manifest.

In certain cases, we have been able to provoke the apparition of the terrifying position by causing animals to become fatigued.

A mantis, *Mantis laticollis*, when it is frightened is in the habit of spreading its wings and its anterior extremities, resting on its four posterior legs. It swells its abdomen which at this moment produces two hernias formed by two little sacs placed between the two anti-penultimate abdominal rings. These sacs are of a very striking color. The anterior pairs are dark blue, and the posterior are red. It is not always easy to force the animal to take on this bizarre position. We have succeeded by shaking the animal, by dragging it by one leg, and by brusquely approaching it with the hand when it was on a limb. This position only lasts about thirty seconds and appears to necessitate a great effort. We have fatigued the animal by forcing it to run inside a cage until it was so weak that it could not stand up. It was then that it assumed the terrifying position, it swelled out its abdomen, and died without changing position.

Similar effects have been observed with flying lizards *Draco volans* and *Draco fimbriatus*. These animals, when pressed, tried to run away; when they were forced to jump they spread out their parachute membranes and vol-planed for a long distance. But finally when over fatigued and when they could no longer run they assumed the terrifying position, opening their mouths and spreading their lateral membranes. When they were still further forced to run and jump they died of fatigue, still holding the terrifying attitude.

From the observations cited, and from others it results that—in the majority of cases the terrifying position is nothing else but a reflex provoked by a general irritation of the entire organism. One cannot exclude the fact that this irritation is provoked by sensations derived through the intermediary of the senses; in these cases the terrifying position has all the appearances of a voluntary action; but the same effect can be obtained by the action of other agents which affect the entire organism (such as fatigue). The terrifying position in our judgment is not a voluntary or conscious action.

SATURDAY AFTERNOON EXCURSIONS FOR 1919.

May 10—Geology; Leamy's Lake, just east of Hull; meet at the end of the Chelsea road electric car line.

May 17—Zoology; Catfish Bay, just west of Hull along the Ottawa; meet at Eddy's office, end of city street car line in Hull.

May 31—Economic entomology; Aylmer Park; by Mr. C. B. Hutchings, Department of Agriculture.

June 7—Ornithology; Beaver Meadow, just west of Hull, along Aylmer road; meet at Eddy's office.

June 14—Zoology; general; across the Gatineau from Gatineau Point; meet the ferry at Rockcliffe Park.

June 21—General; Black Rapids by steamer Wanekewan (consult steamboat time-table—starts about 1.30 p.m.); a reduced rate for the trip will likely be arranged.

Sept. 20—Fungi and fall botany; Billings' woods; meet at end of Bank street car line on Bank street.

Sept. 27—Ferns and Mosses; woods about three-quarters of a mile east of Billings' Bridge; meet at end of Bank street car line.

The time of meeting at the points indicated will be 2.45 p.m., except in the case of the Black Rapids excursion.

Leaders conversant with the subjects mentioned will be on hand to render assistance.

Local members and any others interested are given a most cordial invitation to attend.

MARINE BIOLOGICAL LABORATORY WOODS HOLE LIBRARY MASS.

Hadwen, Seymour. 1919. "Position Terrifiante des Animaux." *The Ottawa naturalist* 32(9), 173–174.

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