

I therefore decided to try my hand at breeding the summer generation, and was successful in rearing four moths. I collected the larvae at Wicken Fen on the 18th June and the moths emerged from the 4th to the 7th July.

The foodplant is the marsh pea (*Lathyrus palustris* L.). At first the larva mines a leaflet, but later makes a spinning in the manner characteristic of the genus. In the marsh pea the leaflets are opposite and project from the stem at an angle of some 60 to 90 degrees to each other. The paludana larva draws a pair of leaves together and spins them into an extremely neat pod—so neat that at first sight the spinning appears to consist of a single leaflet. It is a considerable architectural feat to unite leaves which are relatively so widely separated. The larva feeds inside the pod, depositing its frass at the end nearer the stalk, and blanching the further portion of the leaves. Each larva constructs several pods, often only making a short journey to the adjacent pair of leaflets. The larvae of the summer generation of moths feed in June, and those of the spring generation in September, over-wintering, as has been indicated, as larvae in their cocoons. They leave their pods for this purpose, in captivity spinning up in folds of the tissue paper lining their container. The larva is putty-brown with a slight greenish tinge in some cases, and lacks conspicuous markings.

A different kind of larva, collected on *Lathyrus palustris* on the same day, produced a specimen of *Pandemis dumetana* Treits. This species is known to have a fairly wide range of foodplants, but does not appear to have been previously recorded as feeding on the marsh pea.

Labrey Cottage, Victoria Gardens, Saffron Walden, Essex. 16.xi.1968.

## John Lawson (d. 1711) and the origin of the common name “Buck-Moth” for *Hemileuca maia* (Saturniidae)

RONALD STERNE WILKINSON, F.L.S., F.R.E.S.

Michigan State University, East Lansing, Michigan

The usual explanation of the Buck-moth's curious name is that given by Holland (1903): “The name . . . is said to have been given to them because they fly at the time when deer-stalking is in order”, that is, in the autumn (p. 92). While collecting material for a history of American entomology before Say, I have come upon a more detailed explanation, the history of which forms an interesting, if minor, chapter in the folklore of entomology.

Much had been forgotten about the original meaning of the name by Holland's time. The English collector John Abbot, for many years a resident of Virginia and Georgia, explained over a century earlier (Abbot and Smith, 1797) that the “Moth is called in America the Buck fly, from an erroneous vulgar notion that Bucks breed its caterpillars in their heads, and blow them out of their nostrils. This opinion originated from the fly coming out in the rutting season, while the Bucks are pursuing the Does. The hunters therefore take notice of the insect, in order to know the proper season for their sport, which is later in



Georgia than in Virginia, as is the appearance of these flies" (Vol. I, p. 99).

Abbot's actual notes for the *Natural history of the rarer lepidopterous insects of Georgia*, sent to Sir James Edward Smith and edited by him, give basically the same information in less polished language, and add nothing to the printed account. However, when preparing the volume, editor Smith added that "As the *larvae* of many insects do occasionally breed in the bony cavities of the nose in animals, and sometimes even in the human subject, causing dreadful diseases there, the vulgar notion mentioned by Mr. Abbot may not *always* be erroneous; at least some particular accidental facts of this kind may have led to the general opinion" (Vol. I, p. 99).

It is surprising that such a shrewd and experienced entomological observer as Abbot did not solve the mystery behind the settlers' accounts. Smith, of course, was 'on the right trail.' A fly, the nose-bot *Cephenemyia phobifer* (Clark) deposits its eggs in the nostrils of the white-tailed deer. The larvae grow to over an inch in length, and fall from the nose in the spring to pupate in the ground (Kellogg, 1956; Bennett and Sabrosky, 1962; Stone *et al.*, 1965). Deer are quite commonly infected with nose-bots, and it would have been quite natural for the deer-stalker to link larvae 'blown' from the animal's nostrils in the spring to moths associated with the deer (at least seasonally) in the fall. This explanation of *maia*'s origin was, in fact, a rather clever one for the casual eighteenth-century observer.

The observation was first made much earlier than the 1790s, and it is possible to trace the *phobifer-maia* confusion through almost the entire eighteenth century. Several purely entomological writers mentioned *maia* specifically before Abbot and Smith. These were Drury (1773), who described the species, as well as Cramer (1779) and Fabricius (1793). All are silent on the point in question, but earlier authors are not.

In his discussion of the Virginia deer, Brickell (1737) noted a disorder prevalent among coastal Carolina specimens. "Their Nostrils and Throats are frequently found full of *Bots* or *Maggots* in the *Spring*, which make them very poor at that time; but as the *Summer* approaches these *Bots* become the most beautiful *Butter-flies* imaginable, being large, having black, white, red, and yellow stripes in their Wings" (p. 109).

John Brickell was a physician in Edenton, North Carolina for some years before removing to Ireland and publishing his work at Dublin. He was obviously interested in natural history, and part of the volume is based on original observation. Yet much of Brickell's book is paraphrased from a much earlier treatise, John Lawson's *A new voyage to Carolina* (1709). The exact extent of Brickell's 'borrowing' has been the subject of some debate. His severest critic (Adams, 1952) admitted that "Whereas Lawson had dismissed them in a few words, Brickell went into detail on such creatures as bees, butterflies, and mosquitoes." Evidently Professor Adams was not aware that different species of bees, butterflies and mosquitoes are found in North Carolina and Europe, for he pointed out in debunking Brickell's account that all of these, "it must be noted, could be found in Europe as well as America" (p. 153).



But regardless of Brickell's claim to originality, the passage quoted above is traceable to Lawson, as is a related one on the rabbits of the region, which "breed Maggots in their Testicles and other parts of the Body, which become most beautiful Butter-flies" (p. 127). It is true that Mark Catesby's *The natural history of Carolina, Florida and the Bahama Islands* (1743) had appeared between the two works, and in his discussion of the 'fallow-deer' Catesby had noted that "near the Sea they are always lean, and ill tasted, and are subject to Botts breeding in their Heads and Throats, which they frequently discharge at their Noses" (Vol. II, p. xxviii). Similarly, when discussing the rabbit, he had observed that these were "subject to large Maggots, which are bred between the Skin and Flesh" (Vol. II, p. xxviii). But no mention was made of butterflies or moths being bred from the "Botts", although Catesby discussed and figured a number of Lepidoptera in his splendid work.

If Lawson (1709) is examined, Brickell's source becomes clear: Lawson explains that some deer killed near the coast of Carolina in January "have had abundance of Bots in their Throat, which keep them very poor. As the Summer approaches, these Bots come out, and turn into the finest Butterfly imaginable, being very large, and having black, white and yellow stripes" (ed. 1966, p. 129). On the rabbit, he says that at "one time of the Year, great Bots or Maggots breed betwixt the Skin and Flesh of these Creatures" (ed. 1966, p. 127). Catesby's debt to Lawson is less clear, as he does not include the "butterfly" in his account. Perhaps he did not believe that portion of the story.

Although earlier works mention the deer of the region, such as Lederer (1672), I have found no confusion of *phobifer* and lepidopterous larvae before Lawson. None of the other investigators working the eastern seaboard in the late seventeenth and early eighteenth centuries seem to have noticed *phobifer* larvae at all, despite the busy entomological collecting activity engendered largely by the apothecary-scientist James Petiver, author of the first book on the English Lepidoptera, *Papilionum Britanniae* (1717).

Petiver contacted a miscellany of potential collectors, ranging from ship surgeons to settlers, who sent him plants and animals (including many Lepidoptera) from seaboard localities as far apart as Massachusetts and South Carolina. Much of the resulting correspondence is still preserved in the Sloane Manuscripts, British Museum. I have examined these interesting letters (Wilkinson, 1966a, b, c), as has Raymond Stearns (1952). Petiver supplied his correspondents with printed collecting instructions and equipment, including an early form of bag-net that may have been the first in England and was certainly the first in America (Wilkinson, 1966b, d).

Among Petiver's collectors was our John Lawson, who first went to the American colonies in 1700. Lawson did not meet Petiver before leaving England. He did, however, fall in with several of the apothecary's correspondents when reaching America, and in 1701 he wrote for Petiver's printed instructions. A later letter informed Petiver that "butterflies, & other Insects you may depend on w[ha]tever our new Settlement affords" (Sloane MS. 4063, f. 79).

There is no further Lawson-Petiver correspondence until 1709. In 1708 Lawson returned from Carolina to England to complete his book and secure its publication. During his visit he procured an appoint-



ment as surveyor-general of North Carolina, and met Petiver in person for the first time. The apothecary furnished further directions, books, and "a few pinns that your Insects may not fly away after you have once caught them" (Sloane 3337, f. 63). Petiver's comment alludes to the early practice of direct pinning (Wilkinson, 1966b;); he informed travelers in 1690 that "Insects as Spiders flyes Butterflies and Beetles" should be killed and preserved "by thrusting a pin thr[ough] their Body and s[t]ick[ing] them in your ha[tt] until you get a board [i.e. aboard the ship] then pin them to ye wall of your cabin or ye inside lidd of any Deal Box so yt they may not [be] crushed" (Sloane 3332, f. 2).

In January 1709/10 Lawson left for North Carolina with his new commission, but Petiver did not hear from him for some time. Finally, in a long letter dated 30th December 1710, Lawson reported that he had sent a box of specimens including bird and snake skins, fossils, plants and "4 vials of Insects." He promised to collect further biological specimens, and forward them with the extensive data required by Petiver. Insects would be accompanied by "the months they appear to us in the place of their resort, how they breed & w[h]at changes they undergo, their food, makes [i.e. form, morphology], & parts [;] this may be very well done by hav[ing] a many small Physals or boxes w[i]th descriptions of every Insect contained in each bottle & when you receive them You may rank them on wyer pins in little drawers as you think fitt having y[ou]r notes constantly by you." The interesting letter (Sloane 4064, ff. 249-50) shows that Lawson envisioned extensive collecting enterprises that were terminated when he was killed by Indians while searching for plants in September, 1711.

Further details about Lawson's life are given by Lefler in his introduction to *A new voyage to Carolina* (1966), but nowhere except in the cited passages from the *Voyage* have I found reference by Lawson to the nose-bot phenomenon. Was the "very large" butterfly with "black, white and yellow Stripes" the moth *Hemileuca maia* imperfectly or fleetingly observed, or had the end product of nose-bot metamorphosis been changed in the minds of colonial observers between Lawson and Abbot?

Some moths were, of course, thought to be butterflies in the eighteenth century. But only several large North Carolina Lepidoptera fit Lawson's description even generally, and none do so specifically. *Graphium marcellus* (Cramer) at least has black and white "stripes", and it is large. But *Hemileuca maia* fits these criteria as well. Moreover, the abdomen of *maia* does contain the colour orange, if not yellow. Considering Abbot's statement, this is probably the insect meant by Lawson. Perhaps he did not see the moth at all, and was only repeating a settler's exaggerated description.

I attempted to solve the problem while examining what remains of Petiver's collection of insects, now at the British Museum (Natural History). Most of the specimens in the two leather-bound volumes are Lepidoptera. Each is placed in a mica sandwich which has been sealed with tape and fixed to the page, for Petiver gave up pinning insects due to the ravages of pests. Among the Lepidoptera are the oldest North American specimens extant, some collected as early as the end of the seventeenth century.



The insects almost always have reference numbers, some referring to the lists in Petiver's many publications, and some to his data notebook, now lost. Numerous American species are recognizable, and many are still in excellent condition, even after more than 250 years of storage. Some have the collector's name as well as locality data written directly on their bindings. But there is no *Hemileuca maia* at all. One may have existed, sent by Lawson, for the naked tabs on almost every page show that many specimens were removed as curiosities before the Petiver volumes came under the care of the Entomological Librarian.

Thus although much of interest to the student of early American entomology can be found in Petiver's correspondence and collection, these give no further information about the origin of the story of Lepidoptera engendered from the nose-bots of deer. With Lawson's statement the matter must rest at present, although extensive research in late seventeenth-century sources may tell us more

### Acknowledgments

I am indebted to the staff of the Entomology Library, British Museum (Natural History), who very kindly afforded me special facilities for studying the Petiver Collection. Miss Sandra Raphael, Librarian of the Linnean Society of London, was especially helpful with the papers of Sir James Edward Smith. Dr. Rollin Baker, Dept. of Zoology, Michigan State University, advised from his experience with the white-tailed deer.

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