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JOHN WHITE'S DRAWINGS OF *PAPILIO GLAUCUS* L.
(LEPIDOPTERA: PAPILIONIDAE): NEW LIGHT ON THE
'FIRST AMERICAN BUTTERFLY' AND THE PROBLEM OF
GLAUCUS VERSUS *ANTILOCHUS* L.
PART I: WHITE TO MOFFET¹

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All American lepidopterists are familiar with the "first picture of an American butterfly." William J. Holland's account of one of John White's watercolors of *Papilio glaucus* L. first appeared as a separate article (Holland, 1929), and was later adapted for the second edition of his immensely popular *The Butterfly Book* (Holland, 1931). Subsequent research has added many facts to our knowledge of White's life, and much more can now be said about his paintings and later use of them. A reappraisal of the first identifiable record of a North American butterfly is now possible, and, more important to taxonomists, evidence can be provided to support a decision upon the suggestion of F. Martin Brown (1968) that the name of the yellow form of *Papilio glaucus* should be *antiloachus* L.

The chapter "John White: An Attempt at Identification" in Hulton and Quinn (1964) summarizes what is now known about White. He seems to have been born between 1540-50, and there is good evidence that he accompanied Frobisher on his second (1577) voyage to find a Northwest Passage. White's watercolors of Eskimos, now with the rest of his paintings in the British Museum, probably date from this voyage. By 1584 White had fallen in with Walter Raleigh, who was then planning colonization in the New World. The first of White's voyages to "Virginia" was quite probably with the Amadas-Barlowe coastal reconnaissance in 1584. The second was the colonization voyage of 1585, which established the first English settlement in the New World on Roanoke Island, in what is now North Carolina. White remained in the area, making sketches and maps, until the summer of 1586. He returned to England when the first colony was disbanded, and early in January 1587 he was named governor in Raleigh's grant for a new attempt. The story of his "Lost Colony" is well known, and his service with the Raleigh enterprises as artist-explorer and governor is reasonably well documented, but White's life after the return from the search for the "Lost Colony" can only be traced imperfectly; he was a resident of Newtown, Kilmore, Ireland in 1593, and he may have been the John White "late of parts beyond the seas" who died outside of England in or before 1606 (Hulton and Quinn, 1964).

The paintings of aborigines, fauna and flora made by White during his American voyages have had a long and complicated history. Hulton and Quinn (1964) have suggested that he first made 'field sketches' which were later used to produce the finished watercolors which now remain. The main collection was eventually bound together, and after a succession of fortunes, was sold to the British Museum by the American dealer Henry Stevens in 1866. One of White's colored drawings of *Papilio glaucus*, evidently made from his field sketch, is in the collection obtained from Stevens (Figure 1), but the more famous watercolor of the "first American butterfly", the one publicized by Holland (Figure 2), had quite a different history. It is part of the manuscript of Thomas Moffet's *Insectorvm sive Minimorum Animalium Theatrum* (London, 1634), also in the British Museum. How it came there is much clearer now than in Holland's time.

This finished painting, probably from the same field sketch, was given by White to the English naturalist Thomas Penny in 1587. On the drawing is a note in an Italianate hand

¹Based on a paper delivered at the twentieth annual meeting of the Lepidopterists' Society, East Lansing, Michigan, June 1969.

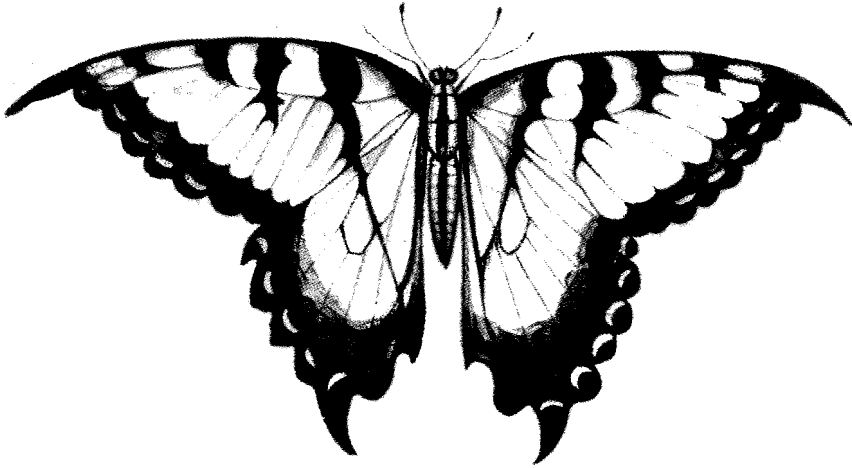


Fig. 1. Watercolor by John White. British Museum P&D 1906-5-9-1 (66); C-M. & H. 58.

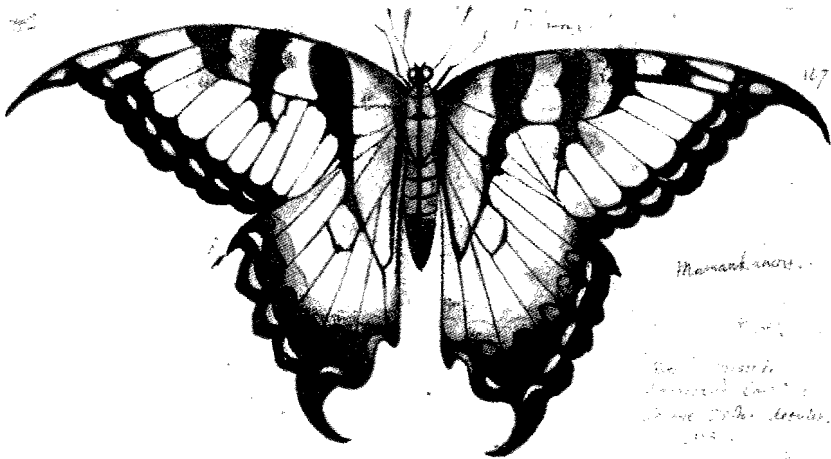


Fig. 2. Watercolor by John White. British Museum MSS. Sloane 4014, f. 96r.

explaining that "Hanc e Virginia Americana Candidus [i.e. White] ad me Pictor detulit. 1587" (White the painter brought me this [drawing] from American Virginia, 1587). Holland was not sure whether the comment was in the hand of Thomas Wotton or Penny, but in his chapter on "John White's Significance for Natural History" in Hulston and Quinn (1964), Raven infers that Penny wrote the 'caption'.

Thomas Penny (ca. 1532-88) was one of the earliest English students of insects. Born at Gressingham, Lancashire, he graduated from Trinity College, Cambridge in 1551, and

remained at the College in various offices until 1565. During his later Cambridge years he studied botany and medicine, and his interest in entomology dated from at least 1563 (Moffet, 1634, p. 270). In 1565 Penny travelled to Zurich, having received an introduction to the great Renaissance naturalist Conrad Gesner. He arrived shortly before Gesner's death, and was entrusted with the notes for the section on insects to have been published by Gesner in the *Historia Animalium*. Penny travelled through Europe studying plants and insects, returning to England in 1569 with his M.D. degree. For the remainder of his life he collected information for a book on insects which would incorporate Gesner's data, and many of his friends contributed their assistance. Penny's entomological activities are discussed by Raven (1947) and Lisney (1960).

The watercolor discussed by Holland was apparently given to Penny by White as information for the book that Penny did not live to finish. Precisely when White made the drawing is another problem. The note that it was brought from "Virginia" in 1587 gives some help, but this is hardly decisive. Raven, in Hulton and Quinn (1964), suggests that White's connection with Penny extended over at least several years, and points out that White donated other entomological illustrations to Penny's records; a gadfly, two fireflies and a cicada (Sloane MS. 4014, ff. 63r, 69v, 109r, 124v). Raven queries whether the watercolor of *glaucus* was the result of an earlier voyage and was given to Penny early in 1587, before White's 1587 voyage to "Virginia" (May-December), or whether the drawing was a result of the 1587 voyage. This question cannot now be decided, but one can assume that the specimen itself was captured on the Atlantic coast between 1584 and 1587. That the insect was indeed *glaucus* can hardly be doubted, despite the fantastic apices of the forewings and the pointed tails, embellishments probably explained by the fact that White worked from rough sketches made in the field. Of course the specimen itself has long since perished, if it was ever kept; the earliest remaining North American specimens of Lepidoptera are in the collection of the English entomological entrepreneur James Petiver, and these date from slightly over a century later (Wilkinson, 1969). One can also say that the White specimen may have been captured without the aid of a net, as the earliest verified usage of that device is in the next century (Wilkinson, 1966).

The White-Penny drawing was among Penny's papers at his death. The entomological notes were put in order by his friend Thomas Moffet (1553-1604), a fashionable London physician. Moffet had a passing interest in natural history, including entomology. There is at least some evidence that he observed insects in the field; for example, in his *Theatrum* there is a passage about his and Penny's herbalizing in an Essex wood, which, incidentally, tells a little about collecting methods in the pre-net era. Moffet was examining a nest of wasps, and the insects attacked his party; they were forced to defend themselves by the means of branches of the broom-plant which they were using to collect insects: "in manibus genistae aliquot ramos (quibus insecta comprehendere soliti fuimus) in tulelam & defensionem nostram portassemus. . ." (Moffet, 1634, p. 45).

Yet, Moffet's obvious additions to Penny's papers are rather uncritical, and show more literary than entomological knowledge. He worked the notes into a book manuscript between Penny's death and 1589, adding observations of his own and over a hundred and fifty illustrations. The manuscript (Sloane 4014), containing the White-Penny drawings of *glaucus* and other insects, was licensed in 1590 to be published at The Hague, but the printing never took place. Raven (1947) repeats the suggestion that the book may have been printed in 1598 (at Frankfurt?), but no copy of such an edition remains. Whatever the reason for delay, Moffet wrote a new dedication to James I, but never secured printing of the manuscript. It was sold after his death to Theodore de Mayerne, who finally arranged for its publication at London in 1634 (Raven, 1947).

The printed work contained the drawing of *glaucus*, transformed into a woodcut (Figure 3). The description of the insect in the *Theatrum* is of some interest: "Diurna Papilio Prima, omnium maxima, maximam partem flavescit, ijs locis partibus[que] exceptis, quae hic atramento denigrantur. Quinetiam extremi illi internarum alarum globuli coeli colorem spirant: ut genuinis saphyris consitum putares. Oculi chrysolylth[um] referunt, magnitudinem formam[que] adeo ad normam exculptam hic exhibemus, ut plura de ijs attexere non sit necessum" (Moffet, 1634, p. 98). When, in 1658, the Gesner-Penny-Moffet accretion was translated into English by John Rowland and

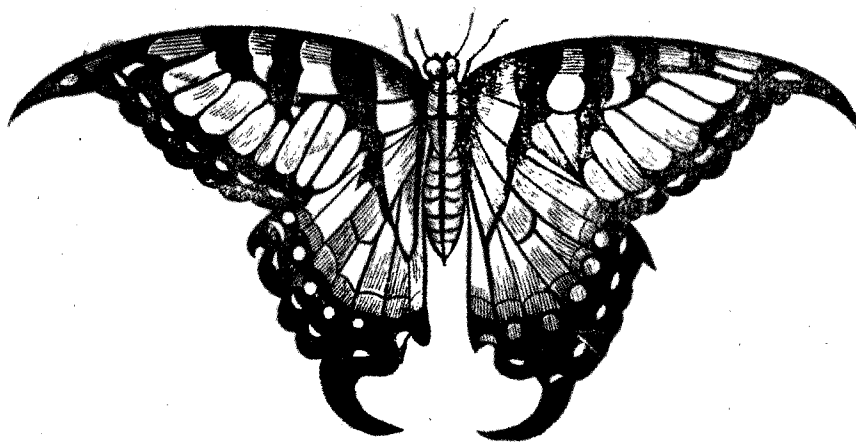


Fig. 3. Woodcut after watercolor in Fig. 2, used in Thomas Moffet, *Insectorvm sive minimorum animalium theatrvm* (London, 1634), 98.

appended to Edward Topsell's *The History of Four-footed Beasts and Serpents* (London, 1658), the description was loosely rendered as follows; "The first Day-Butterfly being the greatest of all, for the most part all yellowish, those places and parts excepted which are here blacked with inke. Moreover, the roundles of the inner wings [the secondaries] are sky-colour, insomuch that you would think they were set with Saphire stones; the eyes are like the Chrysolite: the bignesse and form is so exactly set forth in the figure, that there needs no more to be said of it" (Moffet, 1658, p. 967).

Thus, at least one of White's finished drawings of *Papilio glaucus* found its way into print in the seventeenth century. Its later history, and that of still a third drawing which was eventually copied and adapted by Mark Catesby for his *Natural History of Carolina, Florida and the Bahama Islands*, will be traced in the concluding part of this paper.

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