

A GLIMPSE INTO A “FLORA ET ENTOMOLOGIA”: *THE NATURAL HISTORY OF THE RARER LEPIDOPTEROUS INSECTS OF GEORGIA* BY J. E. SMITH AND J. ABBOT (1797)JOHN V. CALHOUN¹

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ABSTRACT. The illustrations for *The Natural History of the Rarer Lepidopterous Insects of Georgia* (Smith & Abbot 1797) were reproduced from drawings by artist-naturalist John Abbot, who also supplied life history data on each species. James Edward Smith edited Abbot's manuscript and provided additional information for the book. Abbot's original manuscript entries for the 24 butterfly plates are transcribed and compared with the corresponding published letterpress. The early stages and plants in Abbot's butterfly drawings are evaluated. Eighty copies of the book were located in six countries. Dated watermarks on the plates are tabulated and plate captions are compared. Two different versions of Plates 77 and 78 are figured and discussed. Abbot's notes for Plate 31 are reproduced for the first time. A memorandum about the book by J. E. Smith is transcribed. Authorship attribution and past owners of the book are reviewed. At least one early printseller sold sets of plates without letterpress. To promote nomenclatural stability, a lectotype is designated for *Papilio bathyllus* J. E. Smith.

Additional key words: *Dasychira*, *Thorybes*, hostplants, lectotype, watermarks

Heralded by Rothschild & Jordan (1906) as “perhaps the best lepidopterological work of the eighteenth century,” *The Natural History of the Rarer Lepidopterous Insects of Georgia* (Smith & Abbot 1797) was the first major work on North American insects. It has been praised, both for its scientific merit and the quality of its hand-colored plates. It was authored by two extraordinary naturalists. James Edward Smith (1759–1828) was an English doctor and eminent botanist, who founded and served as the first President of the Linnean Society of London. John Abbot (1751–ca. 1840) was an adventuring Englishman who devoted his adult life to documenting the flora and fauna of an untamed southeastern North America. Abbot's groundbreaking artistry contributed to a revolution in entomological illustration. Regrettably, this was the only publication to acknowledge Abbot as an author.

Insects of Georgia was produced in two lavish folio volumes, measuring roughly 31 cm x 41 cm (12 in x 16 in). The entire title was cumbersome, but typical of the period: *The Natural History of the Rarer Lepidopterous Insects of Georgia, Including Their Systematic Characters, the Particulars of Their Several Metamorphoses and the Plants on which They Feed. Collected from the Observations of Mr. John Abbot, Many Years Resident in that Country.* Like other significant publications of its era, the letterpress (text) was provided in English and French in an effort to appeal to both British and continental European buyers. The French translation was allegedly provided by “Romet,” who also translated the 1794 edition of “The Aurelian” by Moses Harris (Hagen 1862–1863, Horn &

Schenkling 1928–1929). No expense was spared in the production of *Insects of Georgia*. The volumes were printed using the finest wove paper from England and included 104 masterfully etched and hand-colored plates of life-size figures, 24 of which depicted butterflies and 80 portrayed moths. The book was exceptional in that it included figures of larvae, pupae and hostplants of each species, not just rigid “cabinet style” illustrations of adult specimens typical of most other early entomological works. The text was subordinate and merely placed the images into the context of contemporary zoological wisdom. Smith's written descriptions were brief, relying on the figures to convey the concept of each species. American entomologist Thaddeus W. Harris wrote in 1830 that the species were “easily identified by Abbott's figures, although from Smith's descriptions alone I could not have made out half of them” (J. E. Le Conte correspondence, American Philosophical Society). The book documented Abbot's observations in Georgia from 1776 to 1792, but also some of his earlier findings in Virginia from 1773 to 1776.

Forty-three of the 57 Lepidoptera species described by Smith in *Insects of Georgia* are still recognized, having endured over 200 years of taxonomic scrutiny. In addition, plates in *Insects of Georgia* inspired Johann C. Fabricius (1745–1808) to describe six new butterfly taxa based on the figured hostplants as identified in the book. They are all replacement names for earlier taxa mostly proposed by Fabricius himself, but were not published before his death in 1808. They remained unpublished until a facsimile of this work was produced 130 years later (Fabricius 1938).

Two centuries of critical appraisals have been overwhelmingly friendly to *Insects of Georgia*. English naturalist William Jones was perhaps the first to assess

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the book in a letter to Smith dated 9 September 1797 (Smith correspondence, Linnean Society of London; transcribed in Smith (1832)). After obtaining a gratis copy that Smith arranged through a local bookseller, Jones wrote, "I took it under my arm, but soon found it sufficiently weighty...so I laboured abundantly with my load, in expectation of high gratification from the contents when I should get home—and truly I was not disappointed." He added, "upon the whole, it has the three great requisites to a modern publication,—good letter, good paper, and showy plates." Adrian H. Haworth, another of Smith's friends and later author of *Lepidoptera Britannica* (Haworth 1803–1828), described *Insects of Georgia* as "a magnificent work in folio" (Haworth 1807). English naturalist William Swainson, who was seldom complimentary, praised the book as "unquestionably one of the most beautiful and the most valuable that this or any county can boast of." He thought it was one of the two "best illustrative publications upon Insects that have ever been given to the world" (Swainson 1834). Duncan (1841) wrote, "of this magnificent publication it is not easy to speak in terms of too high commendation." Scudder (1888a) considered *Insects of Georgia* as "an epoch in the history of entomology in this country." Meiners (1948) called it "a sumptuous work characteristic of fine book printing of its day." Rare book firm H. P. Kraus ([1964]) characterized it as a "splendid example of the English color-plate book in its best period." Anthony H. Swann of the once renowned London bookseller Weldon & Wesley credited his taste for fine old books to a copy of *Insects of Georgia* that the firm had in its showroom in 1974. The bookseller described it as "the most important illustrated work on American natural history of the 18th century" (Swann 1996).

The most comprehensive review of *Insects of Georgia* was published in January 1798 by an anonymous critic who eloquently declared, "In this state of fluctuation, between the bursting of old, and the bubbling up of new theories, the greatest service that can possibly be rendered to the real progress of entomology, is the collection of the produce of judicious researches; and in this respect, the volumes before us are of the highest value. What is given here are not fragments of knowledge, but the result of a series of finished observations. If the work allure and delight by splendour of appearance, and uniform elegance of execution, it still more surprises and instructs by the richness and novelty of its contents, the lucid order with which they are digested, the precision and vivacity of the designs, the modesty of method, and spirit of philosophy, that pervade the whole" (Anonymous 1798).

Like other contemporary works, *Insects of Georgia*

included a brief excerpt of poetry that conveyed a sentiment about the subject matter. On the title page, Smith quoted two lines from a poem credited to "Mrs. Barbauld." This poem was entitled "To a LADY, With some painted Flowers" and was published by Anna Laetitia Aikin (1773), who used her married name of Barbauld for later editions. Smith revealed his botanical inclinations by applying a poem about flowers to Lepidoptera.

Insects of Georgia was initially offered in 1797 in printer's boards for 20 guineas, equivalent to £21 (Bent 1799, Rich 1846, Allibone 1886). This price had the same "purchasing power" as £1,485 in 2002 (Officer 2004). Bohn (1841) listed a slightly higher original price of £25, 4s, but the £21 price is supported by a contemporary inscription in a copy of the book at Tulane University that reads "published at 21£ bds [boards]." A typesetting error is probably responsible for the ridiculously low original sale price of £2, 2s given by Anonymous (1798). A review of auction catalogs and book price indexes revealed over 40 published sales of the book dating to as early as 1815. Eleven sets have been auctioned over the last 25 years. Owing to the recent popularity of early color plate books on natural history, the value of *Insects of Georgia* has skyrocketed during this period. A finely bound copy sold in 1988 for \$55,000 US (McGrath 1988), then equivalent to £30,900 (Officer 2004). A unique copy with vellum plates was sold in 1997 for £50,000 (Leab 1998, Heath 1999). Since the 1990s, butterflies and moths have become increasingly popular subjects of antiquarian artwork. Copies of *Insects of Georgia* are often broken in order to sell the plates individually, while the letterpress is typically discarded or presented with the plates. Unfortunately, this practice is ensuring the loss of surviving intact volumes.

Despite its great modern value, there was little market for this type of elaborate publication in Europe or America during the late eighteenth and early nineteenth centuries. Swainson (1834) estimated that nine out of ten illustrated books were sure to "entail pecuniary loss upon their projectors." Indeed, publisher James Edwards complained that he had lost money in the production of *Insects of Georgia* and had no desire to publish a continuation of the work (1806 letter from John Francillon to John Philips, British Library, London). There is evidence, however, that the book was reissued multiple times. Two plates exhibit different states (versions) between issues, leading to misconceptions about the identity of two moth taxa described in the book. Captions on the plates also vary. While researching the work of John Abbot, I became intrigued by these and other discrepancies. I embarked

upon a study to better understand the enigmatic history of this legendary publication and assess the scientific accuracy of its butterfly illustrations. I herein present the results of this investigation and offer an extended glimpse into the production of *Insects of Georgia* (Smith & Abbot 1797).

METHODS

Surviving copies of *Insects of Georgia* were located via WorldCat of the Online Computer Library Center (OCLC), web-based library catalogs, miscellaneous published references, and other lepidopterists. Each repository was contacted and/or visited to obtain relevant data. I personally examined the following materials: 1) 15 copies of the book in the US and UK, 2) John Abbot's original drawings and manuscript notes for the book deposited at The John Work Garrett Library of The Johns Hopkins University and the Linnean Society of London, 3) Lepidoptera drawings by Abbot at The Natural History Museum, London, as well as those at the University of South Carolina and the University of Georgia, 4) the correspondence of J. E. Smith and William Swainson at the Linnean Society of London and 5) the John E. Le Conte correspondence at the American Philosophical Society, Philadelphia. I identified the insects portrayed in the 24 original butterfly drawings for the book. Figures of larvae and pupae were evaluated for accuracy using written descriptions, line drawings, and photographs of living specimens for comparison. Digital photographs of the butterfly plates were submitted to a qualified botanist for accurate determinations of the depicted plants, which were then evaluated as valid hostplants. Specialists were contacted to verify the identities of several butterfly and moth species. Type material was examined to confirm the identity of one species of butterfly. A digital scan of an old set of 73 individual plates was analyzed and compared with plates bound into copies of the book.

RESULTS

Original drawings, notes, and a mutual friend.

The nucleus of *Insects of Georgia* is a set of 104 drawings and accompanying notes by John Abbot, who left London in 1773 and lived out the remainder of his life in Virginia and Georgia. Abbot may have prepared the drawings expressly for Smith, but it is still obscure how Smith acquired them. It is doubtful that Abbot would have personally sought Smith as a potential author of a book about Lepidoptera. Smith was primarily a botanist who was only 14 years old when Abbot departed London for America. Smith more likely admired Abbot's work at the shop of John Francillon

(1744–1816) and ordered a set of drawings for possible publication. Francillon was a London jeweler who sold Abbot's drawings and specimens to the naturalists of Britain and Europe. Smith was acquainted with Francillon and undoubtedly understood Francillon's unique relationship with Abbot. The purchase of the drawings through a third party is supported by the absence of letters from Abbot among the Smith correspondence at the Linnean Society of London (see Dawson 1934). At first, Smith may have been interested in the drawings solely for their botanical value. Upon receiving them he no doubt realized their greater significance, stating in the preface, "Mr. Abbot's accurate illustrations...render his farther remarks upon insects extremely desirable."

As asserted by Dow (1914), Abbot probably did not learn of *Insects of Georgia* until sometime after its publication. Smith is known to have presented gratis copies of the book, but he did not even donate a copy to his own Linnean Society until at least 1805 (Anonymous 1807a). Abbot almost surely obtained a copy of *Insects of Georgia* by about 1813, as he wrote Latin names from the book on a number of drawings he prepared for John E. Le Conte (Calhoun 2004). In 1816, Abbot directly referred to "Smith's Lepidoptera *Insects of Georgia*" in a letter to William Swainson (Swainson correspondence, Linnean Society of London).

The original drawings for *Insects of Georgia* were completed ca. 1783–1792. This was established from 1) Abbot's accompanying notes for Plate 18 that mention finding *Urbanus proteus* (L.) "plenty in the Year 1782, but have not seen any since," and 2) 1793 is the earliest date etched on the printed plates. As far as I could determine, no lepidopterist had examined the original drawings or notes for *Insects of Georgia* since the publication of the book.

Abbot's manuscript for these drawings is entitled, "A Natural History of the North American Insects. Particularly those of the State of Georgia. Including the changes of the principal Insects of those parts, together with the plant or flower each species feeds on, in their Natural Colours. Drawn from Nature by John Abbot many years Resident in those parts. With Notes Scientific and Illustrative." The manuscript was purchased in 1829 by the Linnean Society of London along with Smith's library and collections (Gage & Stearn 1988). It is comprised of 34 laid paper pages measuring approximately 27 cm x 16.5 cm (10.6 in x 6.5 in). Pages 9 and 10 are missing and were probably discarded by Smith as irrelevant to the book. Apparently aware that the drawings were going to Smith, Abbot wrote, "As I intended the following, I think you may still publish it as a separate work from any

other you are at present engaged in.” Referring to the species depicted in his drawings, Abbot continued, “I have not preferred to describe them in any scientific manner, leaving that for you[r] superior Abilities [sic].”

It is generally believed that the biological notes in *Insects of Georgia* were copied verbatim from Abbot's manuscript (e.g. Anonymous 1798, Harris [1950], 1972). In reality, Abbot's notes were extensively edited by Smith, who wrote in the introduction of the book that he “digested” them into “some sort of style and order.” Smith inserted scientific names of plants and insects, which Abbot infrequently attempted because of his limited access to scientific publications. Smith also changed some of Abbot's common names to be more consistent with European species. Although Smith wrote numerous changes directly on Abbot's manuscript, the book shows many instances where the prose was further refined. A direct comparison of Abbot's entries with the published versions reveals Smith's countless alterations (Table 1). Also included in the sections derived from Abbot are references to the occurrence of species outside Virginia and Georgia. These remarks could be used as proof that Abbot was aware of such records and even that he received specimens from those areas. For example, Anonymous (1798) stated that “Mr. Abbot informs us” that several species “have been sometimes bred from the pupa in England.” The original manuscript reveals that all these comments were derived entirely from Smith.

Although Abbot briefly worked as a schoolteacher, his grammar and punctuation was notoriously uneven. Walton (1921) ascribed this to occasional lapses of a well educated person, possibly caused by a lack of contact with educated people for long periods of time or even the approach of senility. However, Abbot's spelling actually improved with age; he repeatedly employed the incorrect spelling “Catterpillers” in the notes acquired by Smith, but this was later corrected in notes for other sets of drawings. His grammar also became more refined over time, probably through his ongoing correspondence with leading naturalists of his day. Abbot considered his brief comments to be “rude notes.” He was obviously more concerned with documenting his observations than being grammatically correct.

The disposition of the original drawings for *Insects of Georgia* has been misunderstood for many years. Some thought they were the set of drawings once owned by Thaddeus W. Harris. Harris obtained these drawings from English lepidopterist Edward Doubleday who had purchased them from a London bookseller in June 1839 (Scudder 1869). This set of 84 drawings of Coleoptera and Lepidoptera is dated 1830—far too late for use in

Insects of Georgia. Scudder (1888b) and Dow (1914) attributed these drawings to an “inferior copiest,” but I recently examined them and found that their style is consistent with Abbot's work and the title page is written in his hand. In 1852, French entomologist Achille Guenée mentioned *Insects of Georgia* and remarked, “I am happy to have in front of me the original drawings of this beautiful work” (translation from French) (Guenée 1852). This set of drawings was loaned to Guenée by fellow French lepidopterist Jean B. A. D. de Boisduval, who had used them for some plates in Boisduval & Le Conte (1829–[1837]). The whereabouts of these drawings is unknown, but Abbot's accompanying notes are preserved at Harvard University (see Calhoun 2004). In 1869, John Edward Gray of the British Museum wrote that “Sir James Edward Smith published a selection of the drawings of Lepidoptera” that were acquired by the museum in 1818 (S. H. Scudder correspondence, Harvard University). This claim was repeated in 1883 by Albert Gunther of the British Museum (Gilbert 1998) and again by Weiss (1936). Kirby (1897) was less certain, suggesting that “Sir James Edward Smith may have taken his selection (though apparently not in every case)” from the drawings at the BMNH. These drawings in London, now deposited at the Entomology Library of The Natural History Museum, were completed by Abbot about 1792–1812 and later bound into 17 volumes by John Francillon. Although these illustrations include many duplicates of adults and early stages in *Insects of Georgia*, none of the compositions exactly match the plates in the book. Most recently, bookseller H. P. Kraus ([1964]) advertised a set of drawings as the originals for *Insects of Georgia*. These drawings were purchased by the University of South Carolina, who reiterated their association with *Insects of Georgia* (Ridge 1966). Now preserved in the Thomas Library, a number of these drawings include penciled annotations, probably written by an agent of H. P. Kraus, that refer to plates in *Insects of Georgia*. An analysis of these drawings indicated that they were actually reproduced in Boisduval & Le Conte (1829–[1837]) (Calhoun 2003, 2004).

The drawings reproduced in *Insects of Georgia* are preserved at The John Work Garrett Library of The Johns Hopkins University, Baltimore, Maryland. They are among Abbot's best, reflecting his strong desire to prove himself through their publication. Consistent with his early work in America, Abbot figured the ventral surfaces of butterflies by portraying adults in flight with fully outstretched wings. Sometime around 1800 he settled into his more mature style of depicting adults in more natural closed-wing postures resting on

plants, often casting shadows across their perches. Though generally considered masterful, the quality of the drawings that Abbot later produced was irregular. Most were very meticulous, while others were downright clumsy (see Calhoun 2004, 2005).

The original drawings for *Insects of Georgia* were

rendered in watercolor and graphite, mostly on laid paper, though ten were completed on cream colored wove paper. Many sheets of laid paper bear undated watermarks of “Taylor,” or “I Taylor. These sheets were manufactured by I. Taylor who produced paper from 1746–1794 at the Basted Mill in West Kent, England

TABLE 1. Adult butterflies, early stages, and plants depicted in *Insects of Georgia*. Also a comparison of John Abbot's original manuscript entries against the edited letterpress (Abbot's grammar and spelling are preserved). Insect nomenclature follows Opler & Warren (2002). Adult insect figures: D=dorsal, V=ventral, m=male, f=female. Early stages: L=larva, P=pupa, a=acceptable, u=unacceptable. B&L=Boisduval & Le Conte (1829-[1837]). Status of figured hostplants (in brackets): C=confirmed, NC=needs confirmation, E=erroneous. Historical plant determinations: JES=J. E. Smith (in Smith & Abbot 1797); AWC=A. W. Chapman (in Scudder 1872). Asterisks (*) denote taxa originally described in the book.

Plate no.	Figured adults and early stages	Plant species and host status	Manuscript entry by J. Abbot	Edited book entry by J. E. Smith
1	<i>Papilio polyxenes</i> Fab. Dm, Df, La, Pa This is a very rare instance where Abbot figured an immature larva.	<i>Foeniculum vulgare</i> L. (Apiaceae) [C] JES: <i>Anthum foeniculum</i> L. AWC: “Garden Fennel” “Rue” doubtless refers to the cultivated European <i>Ruta graveolens</i> L. (Rutaceae), which is a confirmed hostplant.	N ^o 2. <i>Black & yellow Swallow tailed Butterfly. The Catterpillar eats fennel & Rue. Changed into Chrys. 12th July. The Butterfly was bred the 20th Do. This Butterfly is frequent in Virginia, but there is none in Georgia</i> [see entry for Plate 3].	PAPILIO TROILUS, BLACK AND YELLOW SWALLOW-TAIL BUTTERFLY. The caterpillar of this species eats fennel and rue. It changed to a chrysalis July 12th, and the butterfly came forth on the 20th. It is more frequent in Virginia than in Georgia. [Smith's tentative identification of this species as <i>Papilio troilus</i> was due to a common misapplication of the original written description of <i>Papilio polyxenes</i> Fabricius, as well as that of <i>Papilio asterius</i> Fabricius, now treated as a subspecies of <i>P. polyxenes</i> .]
2	<i>Papilio troilus</i> L. Dm, Df, Vm, La, Pa	<i>Sassafras albidum</i> (Nutt.) Nees (Lauraceae) [C] JES: <i>Laurus sassafras</i> L. AWC: <i>Sassafras officinale</i> T. Nees & Ederm.	N ^o 83 <i>The Black Sassafras Swallow tailed Butterfly. Feeds on Sassafras, The Catterpillar folds a Leaf together in which it lives, changing his habitation as its food fails round it-It has a remarkable Scent, from which some calls them mellow Worms. Changed the beginning of Oct. bred 10th March. One in Virginia changed 13th Oct. bred 5th April. They are frequent about the blossoms in the Spring, And as the Weather grows hotter are frequent about wet places in Yards, fords of branches &c.</i>	PAPILIO ILIONEUS, SASSAFRAS BLACK SWALLOW-TAIL BUTTERFLY. Its food is the sassafras, the caterpillar folding a leaf together for an habitation, and removing to a new one, as its sustenance around is exhausted. These caterpillars exhale a remarkable scent, whence they are sometimes called Mellow-worms. Having changed in the beginning of October, they remained in the chrysalis state till the 10th of March. One of them in Virginia changed October 13th, and the fly did not come out till April 5th. This butterfly is frequent about blossoms in the spring; and as the weather grows hotter, resorts to wet places in court-yards, fords of rivulets, &c.
3	<i>Battus philenor</i> (L.) Dm, Df, Vf, La, Pa The synonym <i>Papilio serpentariae</i> Fabricius was derived from the figured plant on this plate as identified by Smith.	<i>Aristolochia serpentaria</i> L. (Aristolochiaceae) [C] JES: <i>Aristolochia serpentaria</i> L. AWC: <i>Aristolochia serpentaria</i> L.	N ^o 84. <i>The Black Snake root Swallow tailed Butterfly. Feeds on Black Snake root, Spun up by the tail 24th April changed 26th the Butterfly was bred the 4th May. Another spun up 20th June, changed 21st bred 5th July, This is one of the common Butterflies, is frequent on the peach blossoms & others in the Spring, & is likewise plenty in Virginia-These 2 species of Catterpillars has retractile horns like No 2 & seem a specific character of the Swallow tailed Genus-I think I mentioned that No 2 is not in Georgia, but this is a mistake having discovered them since</i> [see entry for Plate 1].	PAPILIO PHILENOR. SNAKE-ROOT BLACK SWALLOWTAIL BUTTERFLY. One of these caterpillars was found feeding on the black snake-root, <i>Aristolochia serpentaria</i> , and attached itself to the branch by its tail, the 24th of April. Two days afterwards it changed to a chrysalis, and the fly appeared May 4th. Another spun itself up June 20th, changed 21st, and the fly came out on the 5th of July. This is one of the most common butterflies, frequently seen on the blossoms of the peach and other trees in the spring, and is no less plentiful in Virginia. The retractile horns of this caterpillar seem appropriated to the swallow-tail tribe.

TABLE 1. continued

Plate no.	Figured adults and early stages	Plant species and host status	Manuscript entry by J. Abbot	Edited book entry by J. E. Smith
4	<i>Eurytides marcellus</i> (Cramer) Dm, Vm, La, Pa The synonym <i>Papilio annonae</i> Fabricius was derived from the figured plant on this plate as identified by Smith.	<i>Asimina parviflora</i> (Michx.) Dunal or <i>A. triloba</i> (L.) Dunal (Annonaceae) [C] JES: <i>Annona palustris</i> L. AWC: <i>Asimina triloba</i> (L.) Dunal "Highland" and "Swamp" pawpaws could refer to as many as four species; <i>Asimina parviflora</i> , <i>A. triloba</i> , <i>A. incarna</i> (W. Bartram) Exell, and <i>A. angustifolia</i> Raf., all of which are confirmed hostplants.	N ^o 4. <i>Black barred Swallow Tailed Butterfly. The Catterpillar feeds upon the Papaw, both species Highland, & Swamp Papaw. tied itself up 22d May. changed the 24th Bred the 16th of June. Continues breeding all the Summer. One that changed in Autumn came out the 10th of March following. Is not very Common but much more frequent than in Virginia. Flies very Swift, frequents fruit blossoms, & often sucks damp places in Yards at which time it may be easily Taken</i>	PAPILIO AJAX. BLACK-BARRED SWALLOW-TAIL BUTTERFLY. The caterpillar feeds on the highland as well as the swamp papaw; and having tied itself up the 22d of May, changed to a chrysalis the 24th. The fly came out June 16th. It continues breeding all the summer. One that underwent its change in autumn, came out the 10th of March following. This species is not very common in Georgia, though much more so than in Virginia. It flies very swift, hovering about the blossoms of fruit-trees, and often sucks damp places in yards, when it may be easily taken. [Due to extreme confusion over the identity of <i>Papilio ajax</i> L., this name was suppressed by ICZN Opinion 286 in 1954.]
5	<i>Phoebis sennae</i> (L.) Dm, Df, Vf, La, Pa B&L Pl. 24 figured duplicate larva and pupa.	<i>Chamaecrista fasciculata</i> (Michx.) Greene (Fabaceae) [C] JES: <i>Cassia chamae-crista</i> L. AWC: <i>Cassia marilandica</i> L.	87. <i>American Brimstone. Feeds on the Flower figured, Spun up 30th Aug' changed 31st bred 10th Sep' Another Spun up 23d Sep'. Changed 24th Bred 6th Oct. The Catterpillar is not common, It is likewise in Virginia.</i>	PAPILIO EUBULE. AMERICAN BRIMSTONE BUTTERFLY. The caterpillar feeds on this species of cassia. One of them spun itself up the 30th of August, changed the next day, and the perfect insect appeared September 10th. Another spun on the 23d of September, changed the 24th, and came out the 6th of October. This is not a common caterpillar, though found likewise in Virginia.
6	<i>Danaus plexippus</i> (L.) Dm, Vm, La, Pa The synonym <i>Euploea curassavicae</i> Fabricius was derived from the figured plant on this plate as identified by Smith (see text).	<i>Asclepias tuberosa</i> L. (Apocynaceae) [C] JES: <i>Asclepias curassavica</i> L. AWC: <i>Asclepias tuberosa</i> L. "(not curassavica)"	N ^o 1. <i>Large black & Orange streaked Butterfly. This Catterpillar eats the Butterfly weed. the 24th April it tied itself up by the tail, & the 25th changed into Chrysalis. The 11th of May the Butterfly came out. This Butterfly is not very Common.</i>	PAPILIO ARCHIPPUS. LARGE BLACK AND ORANGE BUTTERFLY. This caterpillar eats the butterfly weed, <i>Asclepias curassavica</i> . On the 24th of April it suspended itself by the tail; changed to a chrysalis next day, and on the 11th of May the butterfly came out. It is not a very common species
7	<i>Danaus gilippus</i> (Cramer) Dm, Df, Vm, La, Pa B&L Pl. 39 figured duplicate larva and pupa.	<i>Asclepias amplexicaulis</i> Sm. (Apocynaceae)* [C] JES: <i>Asclepias amplexicaulis</i> ° Sm. AWC: <i>Asclepias obtusifolia</i> Michx.	N ^o 85. <i>The Chesnut Butterfly. Feeds on The flower figured, Changed 18th June, Bred 26th Is not very Common & I believe is not in Virginia</i>	PAPILIO GILIPPUS. CHESNUT-COLOURED BUTTERFLY. After feeding on the plant here represented, the caterpillar changed to a chrysalis June 18th, and the butterfly came forth the 26th. It is not very common in Georgia, and is I believe, not found in Virginia.
8	<i>Junonia coenia</i> (Hübner) Df, Vm, La, Pa The name <i>Cynthia antirrhini</i> Fabricius was derived from the figured plant on this plate as identified by Smith; it should be considered a synonym of <i>J. coenia</i> , not <i>Junonia orythia</i> (L.).	<i>Linaria canadensis</i> (L.) Chaz. (Veronicaceae) [C] JES: <i>Antirrhinum canadense</i> L. AWC: <i>Linaria canadensis</i> (L.) Chaz.	N ^o 6. <i>American Peacock Butterfly. Feeds upon the Flower in the Drawing. Tied itself up 16th April changed the 18th Bred 4th May. Continues breeding 'till late in in Autumn, This sort is common frequents damp places. bThis flower grows in Corn fields in the Spring. Ought to be of a brighter purple cIt is a common saying here Spring & fall, never Autumn .</i>	PAPILIO ORYTHIA. AMERICAN PEACOCK BUTTERFLY. Its caterpillar eats the plant here represented, which grows plentifully in cornfields in the spring. One of them suspended itself April 16th, changed the 18th, and became a butterfly May 4th. This species continues breeding till late in the autumn, and is very common, frequenting damp places. [Smith incorrectly considered this species to be synonymous with the Asian butterfly, <i>J. orythia</i>]

TABLE 1. continued

Plate no.	Figured adults and early stages	Plant species and host status	Manuscript entry by J. Abbot	Edited book entry by J. E. Smith
9	<i>Vanessa virginiensis</i> (Drury) Df, Vf, La, Pa The synonym <i>Cynthia gnaphalii</i> Fabricius was derived from the figured plant on this plate as identified by Smith.	<i>Pseudognaphalium obtusifolium</i> (L.) Hilliard & B. L. Burtt (Asteraceae) [C] JES: <i>Gnaphalium obtusifolium</i> L. AWC: <i>Gnaphalium polycephalum</i> Michx.	N ^o 5. <i>American Painted Lady Butterfly. Feeds upon Everlasting. Tied itself up 25th April. Changed the 26th Bred 8th May. Continues breeding all the Summer. One that changed the 7th May was bred the 16th. Caterpillers folds & spins the leaves together like the English sort. This Butterfly is frequent, often sucks damp places about houses.</i>	PAPILIO HUNTERA. AMERICAN PAINTED LADY-BUTTERFLY. Feeds upon the everlasting. One caterpillar tied itself up the 25th of April, changed the 26th, came forth a fly the 8th of May. Another that did not change till the 7th of May, came out the 16th. This caterpillar folds and spins the leaves together like that of the English Painted-Lady, <i>P. Cardui</i> . It continues breeding during the summer, and is very commonly seen sucking up moisture from damp places near houses
10	<i>Limenitis arthemis</i> (Drury) (ssp. <i>B. a. astyanax</i> (Fab.)) Dm, Df, Vf, La, Pa	<i>Vaccinium</i> sp., probably <i>stamineum</i> L. (Ericaceae) [C] JES: <i>Vaccinium stamineum</i> L. AWC: <i>Vaccinium stamineum</i> L. Scudder (1888-1889) thought Abbot's "Wild Gooseberry" was a species of <i>Ribes</i> L. (Grossulariaceae), but it was probably Abbot's name for the depicted <i>Vaccinium</i> . "Wild Cherry" (<i>Prunus</i> sp.) (Rosaceae) and "Willow" (<i>Salix</i> sp.) (Salicaceae) are confirmed hostplants.	N ^o 53. <i>Black and Blue Admirable Butterfly. The Catterpillar was taken the begining of June, feeding on the Wild Gooseberry, It also eats Wild Cherry, and Willow. The 8th June it Spun up by the tail, and the 9th changed into Chrysalis, The Butterfly was bred the 18th This Butterfly likewise breeds early in the Spring, having taken them 19th April. It is also in Virginia, but neither the Butterfly or Catterpillar is very Common. Note the figure of the Catterpillar might be a size larger.</i>	PAPILIO URSULA. BLACK AND BLUE ADMIRABLE BUTTERFLY. This caterpillar was taken early in June feeding on the wild gooseberry. It also eats the wild cherry and willow. On the 8th of June it suspended itself by the tail, and changed to a chrysalis on the 9th. The butterfly appeared on the 18th. This species also comes out of the chrysalis early in the spring; I have taken it on the 19th of April. It is not very common either in the larva or perfect state, though found in Virginia as well as in Georgia. The caterpillar in the plate is somewhat under the full size.
11	<i>Polygonia interrogationis</i> (Fab.) Dm, Vm, La, Pa B&L Pl. 51 figured duplicate larva and pupa. The pronounced falcate forewing tips of the adults are more consistent with the overwintering form of the species, while the overall coloring is more typical of the summer form 'umbrosa'. Lintner (1869) also noted this disparity on the published plate. The synonym <i>Cynthia tiliae</i> Fabricius was derived from the figured plant on this plate as identified by Smith (see text). Scudder (1870) described <i>Grapta crameri</i> , based in part on the adults figured on this plate.	<i>Tilia americana</i> L. (Malvaceae) [NC] JES: <i>Tilia alba</i> , Ait. Hort. Kew. AWC: <i>Tilia pubescens</i> Aiton May be a valid captive rearing, but Abbot did not figure or mention <i>Tilia</i> as a host of this species in his later drawings. "Warhew" is doubtless a misspelling of Wahoo, a colloquial name for <i>Tilia</i> . "Lime tree" is also a common name for species of <i>Tilia</i> . "Elm" (<i>Ulmus</i> sp.) (Ulmaceae) and "Sugar berry" (<i>Celtis</i> sp.) (Ulmaceae) are confirmed hostplants.	86. <i>American Comma. Feeds on the Warhew+ figured, Elm, & Sugar berry, Spun up 29th May, changed 30th Bred 7th June, Frequents Swamps & Oak Woods but is not very Common, The Butterfly lives all the Winter & comes forth very early in the Spring, And is likewise in Virginia. +If this was not always a low Bush or Shrub, I should take it for the Lime tree.</i>	PAPILIO C. AUREUM. AMERICAN COMMA BUTTERFLY. This feeds upon the plant called Warhew, which is very like the European lime-tree, except in being always a low bush or shrub; it eats also the sugar berry and the elm. It suspended itself by the tail May 29th, changed 30th, appeared on the wing June 7th. This species frequents swamps and oak woods, but is not very common. The butterfly lives all the winter in places of shelter, coming forth very early in the spring. It occurs likewise in Virginia. [Smith hesitantly associated this species with the Old World <i>Polygonia c-aureum</i> (L.), something he reconsidered in 1798; see Table 4.]
12	<i>Agraulis vanillae</i> (L.) Dm, Df, Vm, La, Pa	<i>Passiflora incarnata</i> L. (Passifloraceae) [C] JES: <i>Passiflora incarnata</i> L. AWC: <i>Passiflora incarnata</i> L.	N ^o 3. <i>Silver spotted Fritillary Butterfly. This Catterpillar feeds upon the Maycock^o. Tied itself up by by the tail 8th July, changed into Chrysalis the 9th Bred the 17th. This species is sometimes frequent, & some Years rare to be met with. It is not in Virginia. "Is not this the passion flower, when ripe the pod is full of seeds, surrounded with a pale yellowish pulp. Tastes like an orange, but fainter is eaten by many people, Is a troublesome weed where it once gets any footing.</i>	PAPILIO PASSIFLORAE. GREAT AMERICAN FRITILLARY. One of these caterpillars tied itself up by the tail July 8th, changed to a chrysalis 9th, came forth in its perfect state 17th. This species is sometimes plentiful, but in some years very rare. It is not in Virginia. Its food is the maycock, <i>Passiflora incarnata</i> , the pod of which when ripe is full of seeds surrounded with pale yellowish pulp, tasting like an orange, but fainter, and is eaten by many people. The plant is a troublesome weed when it gets any footing

TABLE I. continued

Plate no.	Figured adults and early stages	Plant species and host status	Manuscript entry by J. Abbot	Edited book entry by J. E. Smith
13	<i>Neonympha areolatus</i> (J. E. Smith)* Dm, Df, Vf, La, Pa The larva on some published plates is too brown. B&L Pl. 63 figured duplicate larva and pupa. The adults in the original drawing (and duplicate figures in another Abbot drawing at The Natural History Museum, London) appear to possess some characteristics that define the phenotype recognized by Gatrell (1999) as the species <i>N. helicta</i> (Hübner).	<i>Sorghastrum secundum</i> (Elliott) Nash (Poaceae) [NC] JES: <i>Andropogon nutans</i> L. AWC: "Grass" Probably a natural hostplant or captive rearing.	88. <i>Blue spotted Ringlet. Feeds on the Grass figured Changed 22d May, bred 1st June. This Butterfly frequents the sides of Branches (or Rivulets) & is not in Virginia.</i>	PAPILIO AREOLATUS. BLUE-SPOT RINGLET BUTTERFLY. Feeds on the <i>Andropogon nutans</i> , but has not been observed in Virginia, though this grass grows there. The caterpillar changed May 22d, the fly appeared June 1st. It frequents the sides of rivulets, or branches, as they are called in America.
14	<i>Satyrium favonius</i> (J. E. Smith)* Dm, Df, Vf, La, Pa	<i>Quercus laevis</i> Walter (Fagaceae) [NC] JES: <i>Quercus rubra</i> L. AWC: <i>Quercus nigra</i> L. Smith questioned his identification of the depicted oak, writing on Abbot's original drawing, "rubra?" <i>Satyrium favonius</i> is an oak-feeder, thus <i>Q. laevis</i> is probably a natural hostplant.	N° 9. <i>American brown Hair Streak Butterfly. Feeds upon the forked leaf Black Jack Oak. Changed 28th April, bred the 13th May. This species is not very Common.</i>	PAPILIO FAVONIUS. AMERICAN BROWN HAIR-STEAK BUTTERFLY. Feeds on the forked leaved black jack, and other oaks. Changed April 28, came out in the perfect state the 13th of May. It is not a very common species.
15	<i>Celastrina neglecta</i> (W. H. Edwards) Dm, Df, Vf, La, Pa The larva in the book of vellum plates is more detailed than Abbot's original; John Harris probably based this rendition on the larva of the Old World <i>Celastrina argiolus</i> (L.) as identified by Smith.	<i>Erythrina herbacea</i> L. (Fabaceae) [C] JES: <i>Erythrina herbacea</i> L. AWC: <i>Erythrina herbacea</i> L. "Red Root, or redshank" surely refers to the confirmed hostplant of <i>Ceanothus americanus</i> L. (Rhamnaceae). For other drawings, Abbot identified "Red Root or redshank" as the host of <i>Erymnis martialis</i> (Scudder), which also feeds on <i>Ceanothus</i> .	N° 59. <i>Small Blue Butterfly. The Caterpillar was taken on the Wild kind of kidney Bean figured. It also feeds on Red Root, or redshank. This Caterpillar is rare to be met with & seems to be of the same Genus with the hair Streaks. It changed 16th June, Bred 25th June. The Butterfly is frequent in Georgia as well as Virginia.</i>	PAPILIO ARGIOLUS. LITTLE BLUE ARGUS BUTTERFLY. The caterpillar was taken feeding on the plant here represented; it also eats the red root or red shank, but is rarely to be met with, though the butterfly is often seen both in Georgia and Virginia. Its first change took place on the 16th of June, and the fly appeared nine days afterwards. [Smith's identification of this species as <i>C. argiolus</i> is reasonable, given that similar New World species had yet to be recognized and described.]
16	<i>Wallengrenia otho</i> (J. E. Smith)* Dm, Df, Vm, Lu, Pa The larva is not consistent with this species or the closely related <i>W. egeremet</i> (Scudder). B&L Pl. 77 figured duplicate larva and pupa	<i>Sisyrinchium</i> sp. (Iridaceae) [E] JES: <i>Sisyrinchium bermudiana</i> L. AWC: <i>Sisyrinchium anceps</i> Cav "Crabgrass" may refer to various grasses, not only the confirmed hostplant of <i>Digitaria sanguinalis</i> (L.) Scop. (Poaceae). Smith referred to its synonym, <i>Panicum sanguinale</i> .	N° 58. <i>Brown & Yellow Skipper Butterfly. The Caterpillar was taken in August, upon the kind of Grass figured, but is most frequent on Crab Grass. It spun the Grass together for a house like the rest. It spun up in the Grass 19th August, changed the 20th, Bred 30th Do. It is also in Virginia And the Butterfly is pretty common on Blossoms.</i>	PAPILIO OTHO. BROWN AND YELLOW SKIPPER BUTTERFLY. This caterpillar was taken upon the crab grass (<i>Panicum sanguinale</i>). On the 19th of August it spun the leaves together for a shelter, like the rest of this tribe, changed the next day, and on the 30th the butterfly came forth. It is also a native of Virginia, and the fly is not uncommon on various kinds of blossoms
17	<i>Atrytone arogos</i> (Boisduval & Le Conte) Dm, Df, Vm, La, Pa	<i>Echinochloa crusgalli</i> (L.) (Poaceae) [NC] JES: <i>Panicum crus-galli</i> L. AWC: <i>Panicum crus-galli</i> L. Probably a natural hostplant or captive rearing.	89. <i>Brown bordered Yellow Skipper. Feeds on the Grass figured, & Buffalo Grass. the Worms like the rest of the Skippers folds the grass together for Security. Spun up 25th July, changed the 27th Bred 4th August. I met with this Species in the Pine Woods on the North side of Briar Creek near Mill Town plantation, And have not yet seen it any where else.</i>	PAPILIO VITELLIUS. BROWN-BORDERED YELLOW SKIPPER BUTTERFLY. Feeds on the panic-grass figured, and on the buffalo-grass, at length folding the leaves together for protection. It spun itself up July 25, changed 27, came forth in its winged state August 4. This species has been found only in the pine woods on the north side of Briar Creek, near Mill Town plantation.
		(continued on next page)	(continued on next page)	(continued on next page)

TABLE 1. continued

Plate no.	Figured adults and early stages	Plant species and host status	Manuscript entry by J. Abbot	Edited book entry by J. E. Smith
17 continued		“Buffalo Grass” may refer to any number of grasses, not necessarily <i>Buchloe dactyloides</i> (Nutt.) (Poaceae), which is not a known hostplant.	[Mill Town Plantation was located in Georgia along the northeast side of Briar Creek in Screven County, just south of the Burke County line. It is now the site of Millhaven Plantation, the largest family-owned plantation east of the Mississippi River.]	[Smith's improper association of this species with <i>Hesperia vitellius</i> Fabricius led to nomenclatural confusion that lasted for over a century. Boisduval & Le Conte (1829-[1837]) later described <i>Hesperia arogos</i> , but they did not include letterpress for their figures, which could have corrected Smith's previous error.]
18	<i>Urbanus proteus</i> (L.) Dm, Vm, La, Pa B&L Pl. 69 figured duplicate larva and pupa.	<i>Centrosema virginianum</i> (L.) Benth. (Fabaceae) [C] JES: <i>Clitoria mariana</i> L. AWC: <i>Clitoria mariana</i> L. “Wild Pea Vine” apparently refers to <i>C. virginianum</i> . “Kidney beans” is a name that Abbot used for various species of Fabaceae	N ^o 7. <i>Swallow tailed Skipper Butterfly. The Caterpillar of this rare species I discovered by seeing the Butterfly lay some Eggs upon the Wild Pea Vine. The Caterpillars of all the species of Skippers folds the leaves together for safety like the English Admirable, which makes them not easy to be discovered, The 2d of July it spun up in the leaves, & changed into a Chrysalis the 4th covered with a bluish white powder like the Red Underwing. Bred 18th Augt. Only breeds in Autumn. I afterwards discovered some of the Caterpillars on the species of the Kidney beans. This Butterfly was plenty in the Year 1782, but have not seen any since.</i> [This is the only entry among these notes that refers to a specific year.]	PAPILIO PROTEUS. SWALLOW-TAILED SKIPPER BUTTERFLY. The caterpillar of this rare species I discovered by seeing the butterfly lay some eggs upon the wild pea-vine, for the caterpillars of all the species of Skippers fold the leaves together for safety (like the English Admirable, <i>P. Atalanta</i>) which makes them not easy to be discovered. On the 2d of July it spun itself up in the leaves, and on the 4th changed to a chrysalis covered with a bluish white powder, as in the Red Underwing. The fly appeared August 18. It breeds in autumn only. I afterwards discovered some of these caterpillars on another plant of the pea or bean tribe. This butterfly was plentiful in the year 1782, but I have not since met with it.
19	<i>Epargyreus clarus</i> (Cramer) Df, Vm, La, Pa B&L Pl. 72 figured duplicate larva and pupa.	<i>Robinia hispida</i> L. (Fabaceae) [C] JES: <i>Robinia pseudo-acacia</i> L. AWC: <i>Robinia pseudo-acacia</i> L. Identified by Scudder (1888-1889) as <i>Robinia viscosa</i> Vent.	N ^o 54. <i>Great Silver spotted Skipper Butterfly, The Caterpillar was taken feeding on the Wild Locust the latter end of August, It spins the leaves together for a house to secure itself from Birds, &c. like the rest of the Genus, The 5th of Sepr it spun up in the Leaves, & changed the 7th into Chrysalis, the Butterfly was bred the 10th of April following. It is also in Virginia but is not very Common.</i>	PAPILIO TITYRUS. GREAT SILVER-SPOTTED SKIPPER BUTTERFLY. This caterpillar was taken feeding on the wild locust tree the latter end of August. It spins the leaves together to secure itself from birds, &c. like the rest of this tribe. On the 5th of September it spun up in the leaves, and became a chrysalis two days after. The butterfly was produced the 10th of April following. It is also a native of Virginia, but not very common.
20	<i>Achalarus lyciades</i> (Geyer) Df, Vf, La, Pa The larva depicts a rosy form, but the coloration is too vivid on the published plates. B&L Pl. 71 figured duplicate larva and pupa. John Francillon used the unpublished name “ <i>Papilio hedysarum</i> ” to identify an Abbot drawing of this species at The Natural History Museum, London; it was based on Smith's hostplant name on Plate 20 in <i>Insects of Georgia</i> .	<i>Desmodium</i> sp., possibly <i>laevigatum</i> (Nutt.) DC. (Fabaceae) [C] JES: <i>Hedysarum paniculatum</i> L. AWC: <i>Desmodium paniculatum</i> (L.) DC	N ^o 8. <i>White bordered Skipper Butterfly. Feeds upon the Beggars lice (so called from the seeds sticking to people's Clothes) changed 10th July. Bred 23d. This species is common & Continues breeding most part of the Summer.</i>	PAPILIO LYCIDAS. WHITE-BORDERED SKIPPER BUTTERFLY. Feeds on the <i>Hedysarum</i> called Beggar's lice, from the seeds sticking to people's clothes. It changed to a chrysalis July 10, and to a butterfly 23d. This is a common species, and continues breeding most part of the summer.

TABLE 1. continued

Plate no.	Figured adults and early stages	Plant species and host status	Manuscript entry by J. Abbot	Edited book entry by J. E. Smith
21	<i>Erynnis brizo</i> (Boisduval & Le Conte) (see text) Dm <i>Erynnis horatius</i> (Scudder & Burgess) or <i>E. juvenalis</i> (Fabricius) Df The larvae and pupa are basically acceptable for <i>Erynnis</i> , but not necessarily these species. B&L Pl. 66 figured duplicate larva and pupa.	<i>Galactia volubilis</i> (L.) Britton (Fabaceae) [E] JES: <i>Glycine elliptica</i> * AWC: <i>Galactia pilosa</i> Nutt. "Wild Indigo" (<i>Baptisia</i> sp.) is also an erroneous hostplant for these <i>Erynnis</i> species (see text).	N ^o 57. <i>Dingy Skipper Butterfly</i> . Was taken on the Vine that the Catterpillar is figured Upon, It likewise feeds on the Wild Indigo &c. & folds itself in the leaves-it spun up 26th July in the leaves changed 27th And was bred the 5 August. Some that spun up in Sep. & Oct. was bred 22d March following; This is also in Virginia, The Butterfly is very Common in the Spring on Peach & plum Blossoms, It will likewise come & suck Damp places about the houses in the Yards-And the edges of running streams in the Roads &c.	PAPILIO JUVENALIS. DINGY SKIPPER BUTTERFLY. Feeds not only on the plant here represented, but also on others of the same class, and folds itself up in the leaves, in which situation one of them spun itself up July 26, changed 27, and came out August 5. Some that enclosed themselves in September and October did not come out till the 22d of March following. The same insect is a native of Virginia, and in its winged state is very common in the spring on peach and plum blossoms. It will also come and suck damp places in the yards about houses, and the margins of running streams in the roads.
22	<i>Thorybes bathyllus</i> (J. E. Smith)* Dm <i>Thorybes confusus</i> Bell (see text) Df, Vf The larva is not consistent with this species; it most closely resembles the larva of <i>A. lyciades</i> . In fact, Abbot later applied this same figure to a drawing of <i>A. lyciades</i> , now at The Natural History Museum, London. The pupa is acceptable for <i>Thorybes</i> .	<i>Rhynchosia tomentosa</i> (L.) Hook. & Arn. (Fabaceae) [C] JES: <i>Glycine reticulata</i> Swartz AWC: <i>Rhynchosia tomentosa</i> (L.) Hook. & Arn. <i>Rhynchosia tomentosa</i> is a confirmed hostplant of <i>T. bathyllus</i> and, although unrecorded, probably also of <i>T. confusus</i> .	N ^o 55. <i>Brown Skipper Butterfly</i> . This Catterpillar feeds on the Wild Bean, It folds the leaves together for a retreat. The Skipper Catterpillars, oftentimes to secure themselves the better, spins the leaves together, to hide itself in, of some other plant that grows next to that they feed in, Which makes them the harder to find. It spun up in the leaves & changed the 11th of June, The Butterfly came out of Chrysalis the 24th It is also in Virginia, and is one of the Commonest sorts of the Skippers.	PAPILIO BATHYLLUS. BROWN SKIPPER BUTTERFLY. This caterpillar feeds on the wild bean here represented, and folds the leaves together for a retreat. The skipper caterpillars, to conceal themselves the better, generally attach together with a web the leaves of some other plant growing next to that they feed on, which renders them difficult to be met with. This species changed the 11th of June. The butterfly liberated itself the 24th. It occurs also in Virginia, and is one of the most common of its tribe.
23	<i>Lerema accius</i> (J. E. Smith)* Dm, Df, Vf, La, Pa	<i>Wisteria frutescens</i> (L.) Poir. (Fabaceae) [E] JES: <i>Glycine frutescens</i> L. AWC: <i>Wisteria frutescens</i> (L.) Poir. "Indian Corn" (<i>Zea mays</i> L.) (Poaceae) is a confirmed hostplant (see text).	N ^o 56. <i>Brown Corn Skipper Butterfly</i> . Was taken on the Vine that the Catterpillar is figured Upon in June, but is most commonly to be met with on the Indian Corn blades which it spins & folds over itself for its security, in which it is often met with changed into Chrysalis, It changed the 21st June Bred 29th Do. It is also in Virginia but is not near so common as the last described.	PAPILIO ACCIUS. BROWN CORN SKIPPER BUTTERFLY. Brown Corn Skipper Butterfly. This was taken in June on the beautiful climbing shrub here delineated, but is most commonly to be met with in the chrysalis state on the blades of Indian corn, <i>Zea Mays</i> , in which it enfolds itself. It changed the 21st of June, and came out the 29th. It is also found in Virginia, but is not near so common as the last described.
24	<i>Pholisora catullus</i> (Fab.) Dm, Df, Vf, La, Pa	<i>Monarda punctata</i> L. (Lamiaceae) [E] JES: <i>Monarda punctata</i> L. AWC: <i>Monarda punctata</i> L. "Rignum" is an old colloquial name for <i>Monarda punctata</i> . "Careless" (<i>Amaranthus</i> L.) and "Lamb's Quarter" (<i>Chenopodium</i> L.) are confirmed hostplants (see text).	90. <i>Black Skipper</i> . Feeds on Rignum, Common and red Careless, & Lamb's Quarter, folds the leaves together, Spun up in the Leaves, 18th June Bred 26th Do. Another Spun up 14 Sep & Changed 29th July bred 5th August, Spun up 14th Sep, Bred middle March, This Butterfly frequents Gardens & fields among Melon Blossoms &c. & is also in Virginia.	PAPILIO CATULLUS. BLACK SKIPPER BUTTERFLY. Black Skipper Butterfly. Feeds on <i>Monarda punctata</i> , &c. spinning itself up in the folded leaves, in which state one of these caterpillars changed the 18th of June, and appeared on the wing the 26th; another spun and changed July 29, and came out the 5th of August, and a third which enclosed itself September 14, appeared in the middle of March. The butterfly frequents gardens and fields among melon blossoms, and is also found in Virginia.

(Churchill 1935, Balston 1992). Other unidentified and undated watermarks include a Britannia seal with the initials “WK” and a large Strasburg bend and lily pattern subtended by the initials “GR.” These papers are undoubtedly also of English origin. Producing quality drawings in America was not without its challenges. In the “Introductory Notes” of his manuscript used for *Insects of Georgia*, Abbot wrote about the difficulties in mixing paints that retained their colors over time. He complained, “In some of my first Drawings the greens are turned blackish, owing to my then using Sap Green, I now quite discard it, & use a mixture of Gum Bouge & Indigo, but I even find that this fades some.” He admitted that he fell “much short of the Originals for want of sufficient bright colours.”

After their duplication in *Insects of Georgia*, all 104 original drawings were bound with letterpress into volumes of the book where they replaced the printed plates. In preparation for their insertion into these volumes, the drawings were trimmed to measure approximately 23 cm × 32 cm. Windows were cut into blank sheets of wove paper to within 3 mm of the drawing's dimensions. The drawings were then pasted over the windows with a nearly imperceptible seam. Page thickness was thereby minimized and both surfaces of each drawing remained visible. Some of the backing papers bear undated “J Whatman” watermarks (see below).

Smith penciled names and other annotations on many of the drawings, indicating that some of his names were “new.” A large number of his inscriptions were later erased or trimmed off. In some cases, Smith instructed the engraver to alter figures for the published plates. On the original drawing for Plate 8, Smith inscribed, “Mr. Abbot writes this flower ought to be of a brighter purple.” This statement was derived from Abbot's manuscript entry for this drawing (Table 1). Many drawings have the corresponding plate numbers written in pencil in the upper right corner. The bookbinder absentmindedly inserted the drawings for Plates 46 and 53 upside-down.

Two additional drawings by Abbot were inserted into the second volume. They are clearly not part of the same set and may have been acquired at a later date. Smith recorded these drawings as “105” and “106” on the last page of Abbot's notes, adding “No Description.” The first drawing includes figures of adults, larva, pupa, and a plant. Although the adults in the drawing were portrayed as the same species, the male is *Erynnis brizo* (Boisduval & Le Conte) and the female is either *Erynnis juvenalis* (Fabricius) or more likely *Erynnis horatius* (Scudder & Burgess). They are associated with a sprig of what appears to be *Baptisia tinctoria* (L.) R.

Br., an unlikely leguminous hostplant for these oak-feeding species of *Erynnis*. The figures of adults and early stages are the same as those in Abbot's original drawing for Plate 21 in *Insects of Georgia*. In reference to the drawing for Plate 21, Smith wrote on the unpublished drawing, “Same flies as 57 & therefore need not be engraved.” Abbot often duplicated entire drawings or individual figures (Calhoun 2003, 2004, 2005). The second unpublished drawing depicts two figures of adult geometrid moths in a vertical format without early stages or a plant. The top figure is probably a male *Euchleana obtusaria* (Hübner). The bottom figure is a male *Prochoerodes lineola* (Goeze) (= *transversata* (Drury)). Written in Abbot's hand above the figures are the collection dates of “Sep 30.” and “Mar.”

Perhaps as part of their agreement, publisher James Edwards (1720–1816) acquired the original drawings from Smith. It was most likely Edwards who bound them with letterpress into volumes of the book. On a flyleaf in the first volume Edwards wrote, “These original drawings were made in America from nature during a residence of nearly 21 years.” This obviously refers to Abbot's residency in Georgia, which began in 1776, 21 years before the publication of *Insects of Georgia*. Edwards ultimately presented these volumes to Mariamne (Maria Anne) Johnes (1784–1811). Edwards was a friend of her father, Thomas Johnes, publishing books for him and even lending money when necessary (Inglis-Jones 1950, Moore-Colyer 1992). The Johnes estate of Hafod (pronounced “Havod”) was located twelve miles southeast of Aberystwyth, Cardiganshire, Wales.

On the verso of the English title page in the first volume, Edwards inscribed in ink, “To Miss Johnes in testimony of sincere regard from J. Edwards.” Tipped-in on the same page is a three-page letter to Mariamne from her father. Addressed “Pall Mall Saturday,” Thomas Johnes was apparently visiting London where he often stayed with Edwards in his Pall Mall home (Moore-Colyer 1992). Johnes wrote, “Mr. Edwards has just given you the most magnificent & beautiful present I have seen—nothing less than the original drawings of the American Insects.” At the end of the letter, Johnes added, “Mr. Edwards sends his kind compts [compliments].” The letter implies that Edwards presented the volumes for Mariamne's birthday, though they had not met. Although the letter is undated, Johnes remarked that he had “heard that the Duke and Duchess of Rutland are on the point of a separation!! This not many months since they were married.” John Henry Manners, 5th Duke of Rutland (1778–1857), was married on 22 April 1799 (Lundy 2004), thus these

volumes were probably presented for Mariamne's 15th birthday, around 30 June 1799. Mariamne suffered from increasingly serious physical disorders as she grew older, developing spinal disease by the time she was eleven. Edwards probably presented the volumes in hopes of lifting the spirits of his friend's ailing daughter. Mariamne was then struggling to walk without crutches and drinking "sulphurous" water as therapy (letter dated 23 June 1799 from T. Johnes to J. E. Smith, Linnean Society of London).

Some of the original drawings are badly stained from mildew. This damage was present prior to their placement into the volumes and may have occurred during their shipboard journey to England. An engraved black and white portrait of T. Johnes, dated 1810 and measuring 25.5 cm × 34 cm (10 in × 13.4 in), is pasted on the inside cover of the first volume. It may have been added by Mariamne before she died in 1811. Much of the main house at Hafod, including the bulk of Thomas Johnes' extensive library, perished in a fire in 1807 (Moore-Colyer 1992). These volumes must have been among the precious effects that were spared. They were likely shelved in Mariamne's study and not in the library wing of the house. Some of Mariamne's other books are currently deposited at the National Library of Wales.

Smith also knew the Johnes family. He met Thomas Johnes around 1793 (Moore-Colyer 1992) and later published a short book in which he espoused the estate's beauty and botanical richness (Smith 1810). Smith became acquainted with Mariamne when he visited Hafod in August of 1795 (Smith 1832). Upon their first meeting, Smith was amazed by the young girl's abilities. In 1795, Smith wrote, "Miss Johnes, though not above ten years of age, has taken a wonderful turn for botany and entomology" (Smith correspondence, Linnean Society of London). Despite their great age difference, they became very close friends, exchanging letters that included drawings and specimens of local plants and insects. Some of these plant specimens are still contained in small folded pieces of paper among the Smith correspondence at the Linnean Society. In June 1796 Mariamne thanked Smith for sending an insect cabinet already filled with insects. A year later, Smith dedicated *Insects of Georgia* to the teenage girl. He wrote, "Miss Johnes, of Hafod...When you look over this book, it will remind you of many hours we have passed together, in the practical investigation of similar objects to those which it illustrates." Mariamne died only 14 years after the publication of *Insects of Georgia* at the age of 27.

The volumes with the original drawings were likely left behind at Hafod when Mariamne's parents

departed the estate in 1815 to reside at Langstone Cliff Cottage, Devon, England. It was here that Thomas Johnes died the following year. After his death, his widow expressed her gratitude to Smith; "You have been the friend of my beloved husband. The friend and kind instructor of my darling daughter" (Smith correspondence, Linnean Society of London). Soon after, Jane Johnes left Hafod, leaving all its contents, never to return. Hafod was neglected until 1832, when it was purchased by the very unpopular Henry Pelham, 4th Duke of Newcastle. When the Duke moved from Hafod in 1846, he took nearly everything of value with him, including the bulk of the books that the Johnes family owned. Some of these items were sent to London for sale (Inglis-Jones 1950, Moore-Colyer 1992). Mariamne's copy of *Insects of Georgia* was evidently disposed of at that time.

Evidence discovered at the Hargrett Rare Book and Manuscript Library, University of Georgia, confirm that the volumes of original drawings remained in England until the early twentieth century. Three bookseller advertisements, prepared during the early 1920s, were discovered in a copy of *Insects of Georgia*. They were originally received by Leonard L. Mackall (1879–1937), who served as librarian for the Wymberley Jones De Renne Georgia Library near Savannah from 1916 to 1918 (Mackall 1931). The De Renne collections, including this copy of *Insects of Georgia*, were acquired by the University of Georgia in 1938. A sales card dated "December-January, 1922–23" from bookseller Martin A. McGoff of Liverpool, England, offered the volumes of original drawings for £100. McGoff described the set as "contemporary straight-grained green morocco" and containing "The Complete Series of 106 Water-Colour Drawings...(includes two not published)." There is an inscription on a flyleaf in the first volume of this set, probably written in 1922 by McGoff, referring to the set as "Unique! The full set 106 of original paintings." The volumes were purchased from McGoff by The John Clark Co. of Cleveland, who again offered them to Mackall in February 1923 for \$675. On a flyleaf of the first volume is the penciled notation "Cable Feb 10/23," probably written by McGoff to document the sale of the set to John Clark on February 10, 1923. Clark apparently also offered the set to New York City bookseller Ernest Dressel North, who then contacted Mackall in April 1923, apparently unaware that Clark had already advertised the same set to McGoff at a much lower cost: "I have just been offered a remarkable copy of Smith's 'History of the Rarer Lepidopterous Insects of Georgia,' which I am venturing to call to your attention. Of course, the book itself is so well known that I need not describe it; but I give below a brief

description of the copy in question. It contains the complete series of the original water color drawings and is in contemporary straight-grain green morocco. I can sell the copy for \$965.00. If I recall correctly, you are still connected to the library in an advisory capacity, and as such you may be willing to recommend this book to the library.” North also peddled the volumes to John Work Garrett (1872–1942), a wealthy philanthropist and book collector in Baltimore. Perhaps to the chagrin of Mackall, Garrett purchased the copy from North sometime later in 1923 (Rogers-Price 1983). The Garrett home (Evergreen House) and its contents were bequeathed to The Johns Hopkins University in 1942. This copy of *Insects of Georgia* is still preserved in the Garrett family home, which houses the John Work Garrett Library.

As noted by prior booksellers, these volumes are ornately bound in contemporary green straight-grained morocco with gilt tooling and pink endpapers. The intricate frame style design of the boards matches books bound by London bookbinder Staggemeier & Welcher (signed examples in the British Library). L. Staggemeier and Samuel Welcher operated together in London from 1799 until 1809 (Howe 1950, Maxted 1977). The spine titles read “Smith's American Insects,” which is consistent with other early copies of the book. The word “Drawings” appears near the tail of each spine. Placed above the T. Johnes portrait on the inside front cover of the first volume is a small matching green leather bookplate with gold embossed lettering that reads “John & Alice/Garrett/Evergreen House.” The volumes are now kept in rigid green slipcases entitled “The Lepidopterous Insects of Georgia.”

In 1816, Abbot informed W. Swainson that he was working on a set of drawings that included species not figured in *Insects of Georgia*, intending them as a “continuation of that work” (Swainson correspondence, Linnean Society of London). He was clearly familiar with the book and desired to see more of his drawings published. Swainson received the drawings in 1818, but replied that they were “not so highly finished as those must have been from which the plates in Dr. Smith's work were taken.” Swainson never saw the original drawings for *Insects of Georgia*, as he was only ten years old when they were presented to Mariamne Johnes. The drawings completed for Swainson were somewhat smaller in size and many portrayed the same species as those published in *Insects of Georgia*, prompting Swainson to ask Abbot for “a fresh collection of drawings of such insects of the size of Smith's.” Swainson ultimately abandoned any notion of producing a continuation of the book (Swainson 1840). The butterfly drawings in the Swainson set, currently

deposited at the Alexander Turnbull Library (Wellington, New Zealand), will be the subject of forthcoming publication.

Cabinets. During the preparation of *Insects of Georgia*, Smith compared the species in Abbot's drawings with specimens and published references in England. He was unsure about the identity of the many species described in the works of J. C. Fabricius and Carolus Linnaeus (Carl von Linné). Smith wrote in the preface, “This difficulty has been overcome in a great measure by the access which has obligingly been allowed the editor to the cabinets of the British Museum, Sir Joseph Banks, the late Dr. Hunter...and the late Mr. Lee's. He added, “Most of even the new insects figured in this work may be found in one or other of the above cabinets.” The collection of the renowned explorer Joseph Banks (1743–1820) is now at The Natural History Museum, London. The collection of William Hunter (1718–1783), Scottish anatomist and physician, is deposited at the University of Glasgow. The surviving specimens of horticulturist James Lee (1715–1795) are in the Hope Entomological Collections, Oxford University. All three of these collections contain numerous Fabrician types (Zimsen 1964). Smith also consulted the drawings of his friend, William Jones (?–1818), a wealthy wine merchant best remembered for his 1,500 unpublished Lepidoptera illustrations known as “Jones Icones,” completed ca. 1783–1785 and now preserved at the Hope Library of Entomology, Oxford University. Fabricius described many new species from these drawings and Smith considered Jones' knowledge of butterflies as “perhaps unequalled.” A decade earlier, Smith had purchased the collections of Linnaeus, affording him unique access to these type specimens. Finally, Smith compared Abbot's drawings with specimens in the “exquisite collection of Mr. Francillon, transmitted by Abbot himself.” According to Smith, Francillon possessed specimens of all the new species portrayed in the drawings. Most of Francillon's surviving specimens are preserved at The Natural History Museum, London, and the Macleay Museum, University of Sydney.

Sometime after purchasing the Linnaean collections in 1784, Smith began adding more North American Lepidoptera specimens to his own holdings (Mikkola 1983, Honey & Scoble 2001). Smith's specimens, including species figured in *Insects of Georgia*, were acquired along with the Linnaeus collections in 1829 by the Linnean Society of London (Gage & Stearn 1988). References to some of these specimens are found in the copy of *Insects of Georgia* that Smith donated to the Linnean Society. In the margin of the letterpress for 56 species are penciled annotations that read, “In Mus.

Smith" ("In the Museum, from Smith"), "Kind in Mus. Smith," or "In Mus, Smith Specimen." The sexes of the specimens and additional remarks in Latin are sometimes also included. They refer to Smith's specimens in the Linnean Society collection, but are not in Smith's hand and were apparently written after the book was donated to the Linnean Society. Some of Smith's surviving Lepidoptera specimens at the Linnean Society are labeled "Georgia." Honey & Scoble (2001) listed a specimen of *Agraulis vanillae* (L.) that is labeled "Georgia Abbot." Other Lepidoptera specimens from Georgia are labeled "WJH" or "WJH, 1806." These undoubtedly refer to Sir William Jackson Hooker (1785–1865), a leading English botanist who later served as the Director of the Royal Botanic Gardens, Kew. It was Smith who likely directed Hooker toward a career in botany (Anonymous 1867). Hooker's Georgia specimens were probably also collected by Abbot.

Smith did not mention in the introduction of *Insects of Georgia* that he personally possessed any of the figured species, thus he probably acquired them after the book was published. He seems to have based his descriptions on a combination of Abbot's drawings and specimens in other collections. The specimens that Abbot figured, though probably lost, represent syntypes of the taxa described by Smith. Other syntypes may exist among the surviving collections that were examined by Smith, but they are almost certainly unrecognizable.

Publication. During the 1780s and 1790s, the first of the finely illustrated books began to appear from London, helping to put England to the forefront of European printing (Maxted 1977). Many London publishers during this period also maintained their own bookshops and some were also bookbinders. Dow (1914) claimed that Smith bore the expense of publishing *Insects of Georgia*, but evidence indicates that the publishers also suffered losses when the book underperformed. Publishers routinely offered authors a single payment for the copyright of a promising work (Besterman 1938). Although they operated separately, booksellers often combined their efforts to take shares in ambitious projects (Maxted 1977). *Insects of Georgia* was published by three London booksellers who organized printing, distribution, and sales. These firms also worked together on other projects and for a time after publication may have retained exclusive rights to selling *Insects of Georgia* out of their own bookshops.

James Edwards was a bookseller and bookbinder trading under the name of J. Edwards from three addresses on Pall Mall in London from 1784 until his retirement in 1804 (Maxted 1977). Edwards was the

primary publisher of *Insects of Georgia* and complained to John Francillon that he had lost money in its publication. Edwards' bookshop was a popular gathering place for celebrities in the book trades (Inglish-Jones 1950). Smith may have been introduced to Edwards through their mutual friend, Thomas Johnes. John White (1765–1855) was a less influential bookseller who was located at 63 Fleet Street in London from 1792–1816. During most of this time, he traded under the name of J. White (Maxted 1977). White's business practices were reputed to be rather despicable at times (Moore-Colyer 1992).

The Cadell bookselling firm had a long legacy, being described as "the first in Great Britain and perhaps in Europe" (Timperley 1839). Thomas Cadell retired in 1793, giving the business to his son, also named Thomas Cadell (1773–1836). The elder Cadell appointed his apprentice, William Davies (?–1820), as a partner to his son. Davies initially managed company affairs, with the younger Cadell taking little interest in the trade. In 1801, Cadell & Davies sold 740 book titles to the United States government for the fledgling Library of Congress (Bisbort & Osborne 2000). Cadell took over primary management of the firm when Davies fell ill in 1813 (Besterman 1938). The firm operated under the name of Cadell & Davies until the death of Davies in 1820, after which it was known simply as Thomas Cadell. Cadell died in 1836. Cadell & Davies was located at 141 Strand and was considered among the top two or three publishers in London (Besterman 1938, Maxted 1977). The firm was sometimes accused of engaging in projects that were too ambitious and expensive. *Insects of Georgia* was probably one such risky endeavor.

Thomas Bensley II (1760–1835) was retained as the printer for *Insects of Georgia*. The firm operated under the name of T. Bensley and was located on Fleet Street in London beginning in 1785 (Maxted 1977). Tragically, the company's warehouse was destroyed by fire in 1807 and the printing office burned in 1819. Bensley reopened in 1820 at another location on Fleet Street and continued to operate until 1835 (Todd 1972). Bensley, one of London's leading printers, boasted that English presses could "rival and even excel the finest works" of continental European printers. He was one of three London printers who first became involved in the steam printing press (Handover 1960). Bensley was also the printer of richly illustrated books on insects by Edward Donovan in 1798 and 1800. Although published in a smaller format, the overall layout of Donovan's books bears a striking resemblance to *Insects of Georgia*.

Smith reorganized the haphazard arrangement of Abbot's drawings to present them in Linnaean

taxonomic order. In his “Introductory Notes,” Abbot admitted that he did not “marshall them in any Order.” This new arrangement was a challenge for Bensley. Blue check-marks, possibly made by Bensley, are present on Abbot's manuscript to the left of the names for each entry. Despite his care, he mistakenly transposed the notes for one of the drawings (see below). Each letterpress leaf (English recto and French verso) treated a single “Tab.,” from the Latin “Tabula” (a painting, print, or plate). For the first two pages of plate letterpress, Bensley placed a comma after the Latin insect name, but curiously changed his mind and used a period for the remainder of the text (Table 1).

The title page of *Insects of Georgia* is dated 1797. Nonetheless, Sabin (1868) listed the publication date “1796–1798,” which Eames (1892) interpreted as evidence that the work was “issued in numbers” to subscribers. However, a letter written in September 1797 refers to the completed book and a critical review of the entire work was published in January 1798. Thompson (1975) reverted back to 1797 in his revision of Sabin (1868). I have located 80 surviving copies and none include wrappers or other evidence of being issued in parts.

Before the days of mass production, it was customary that books were offered in simple paper-covered printer's pasteboards (laminated paper) with a label identifying the title. The buyer later chose a permanent binding in whatever style they preferred. Copies of *Insects of Georgia* were bound by such esteemed London bookbinders as Christian S. Kalthoeber and Henry Walther, as well as Joshua Devoy of Dublin. Many copies were bound in straight-grained morocco skins of red, blue or green, which were common colors of the period (Ramsden 1956). The color plates were typically bound into the letterpress along their right margins. Nonetheless, one copy I examined had the plates bound along their left margins. Other liberties were occasionally taken, such as moving the French preface to the second volume. Sometimes the French title page was even discarded. Bookbinders also frequently disagreed on where to separate the two volumes; I found some copies with as many as 54 plates in the first volume. The copy with the original drawings assembled by publisher J. Edwards includes 50 plates in the first volume, implying this was the intended layout. The copy that Smith donated to the Linnean Society of London likewise includes 50 plates in the first volume. Some owners combined their sets into a single unwieldy volume. In rare instances, bookbinders inserted some plates in the wrong order. This error appears to have been caused by confusion resulting from the lack of inked numbers on some of the plates. To help rectify

this, numerals were occasionally penciled in.

Misplaced notes. Thomas Bensley confused the notes for Plates 31 and 43. Abbot's manuscript entries for these plates are consecutively numbered 66 and 67. Because of similar sentences at the beginning of these entries, Bensley mistakenly transposed most of the comments for Plate 43 into the letterpress for Plate 31. Plate 31 portrays *Proserpinus gaurae* (J. E. Smith), originally described in *Insects of Georgia* as *Sphinx gaurae*. As a result of Bensley's error, Abbot's notes for this species have never been published. They read (with Abbot's grammar and spelling preserved), “Olive shaded Sphinx. Was taken feeding on the flower figured on the Drawing in May, The 1st of June it went into the Ground, was bred the 25th. Also went in the Ground 7th Sept. Bred 27th March. Is not in Virginia, & is not very common, It flies in the Day time & sucks the blossoms of the Wild Honeysuckle.”

The plates. Up to one-half of early illustrated books consisted of color plates (Swainson 1834) and *Insects of Georgia* was no exception. With 234 total printed pages and 104 plates, 44 percent of its bulk was comprised of plates. Although generally referred to as engravings, the plates in *Insects of Georgia* are etchings, which are more tonal in character. Stipple techniques were employed to create subtle shading. The platemark impressions left on the paper reveal that the etched copper plates measured approximately 29 cm × 38 cm (11 in × 15 in).

Swainson (1840), Walton (1921), and Weiss (1936) identified the primary engraver as the famed English naturalist Moses Harris (1730–ca. 1788). However, many plates clearly possess the signatures “Jn^o Harris Sculp” or “J Harris Sculp” (“Sculp” is short for the Latin “Sculpsit,” meaning “carved by” or “engraved by”). Not only did Moses Harris typically sign his plates “Mos Harris” or “Ms Harris,” he died about five years before the first plates for *Insects of Georgia* were etched. The plates were presumably created by John Harris (1770?–1834), who has been described as an engraver, lithographer, watercolor artist, aquatintist, and miniature painter (Williamson 1919, Mallalieu 1976, Klimt & Steppes 1999–2000). He also specialized in illustrations of birds and insects (Bénézit 1966). Harris should not be mistaken for an earlier British painter, nor booksellers and publishers of the same name that were active during the late eighteenth and early nineteenth centuries. Although other published sources did not provide Harris' date of birth, the Witt Library (1978) listed it as 1770. If correct, he was 23–25 years old when he etched the plates for *Insects of Georgia*.

Harris' signature is present on many of the plates, but only some are dated. Signatures were etched along

stems or on leaves of the illustrated plants on nearly 50 plates, a few well hidden within the designs. Many other plates bear Harris' signature towards the foot of the sheets and some of these are barely perceptible. Plates with foot signatures were the earliest to be etched, being dated 1793 and 1794. One is dated "Jany 1794" and two are dated "Feby 1794." Later in 1794, Harris moved his signature into the designs. Four design signatures are dated 1794 and 12 are dated 1795. Harris' signature was printed backwards on 19 plates. One is dated 1794, while the remainder are dated 1795. Like other engravers of his era, Harris perhaps ultimately settled for more accurate signatures on the copper plates, rather than more poorly executed printed versions that were etched in reverse (Gascoigne 2004). The Sphingidae were the first plates to be etched, while most of the butterflies were among the last. The plates were randomly etched, apparently reflecting the whims of Harris alone.

Plate 16 includes a cryptic engraver's signature, "S/PAR," followed by the year 1795. The "S" is subtended by the other letters and the "P" is laterally inverted. Rogers-Price (1983) interpreted the signature as "S/IAR," but under magnification the letter on the lower left more closely resembles an inverted "P" or even a stylized "R." I was unable to identify this engraver despite consulting definitive published references and sending digital photographs of the signature to specialists at the British Museum, Smithsonian Institution, and elsewhere. There were numerous engravers active in London during the late eighteenth century (Maxted 1977). This plate was probably the very last to be etched in 1795. John Harris may have been unable to complete the work or overlooked this composition among Abbot's drawings. Not only was this plate etched by a different engraver, Abbot formatted the original drawing like his bird illustrations, with a hint of groundcover beneath the plant. The engraver further embellished the composition with a whimsical landscape that incorporated a distant building and palm trees.

The etchings for *Insects of Georgia* are meticulous and effectively capture the minute details of Abbot's drawings. There are few instances where the layout of the prints differ from the original drawings and most merely involve slight relocations of figures. The adult moths on Plates 77 and 78 were transposed on some impressions (see below). An upper flower appearing on the original drawing for Plate 33 was etched, but for some reason it remained uncolored on nearly all the finished prints—there were even attempts to erase its ink outlines. The coloring of prints for fine illustrated works was customarily entrusted to local artists or art

students. Engravers sometimes colored their own prints, but I found no evidence that this was true for all copies of *Insects of Georgia*. As noted by Swainson (1840), high quality books were usually colored by "skillful hands." Despite the likely use of more talented colorists for *Insects of Georgia*, Bohn (1865) and Sabin (1868) complained that some copies were "indifferently" or "badly" colored and of less value. Walton (1921) agreed that "some of the figures have not fared so well at the hands of the colorists." I personally observed pronounced differences in the quality of plates, even within the same volumes. After coloring, many figures on the plates were heightened (varnished) with a solution of gum arabic to impart a bright, glossy appearance.

From the very beginning, there were criticisms that some of the figures in *Insects of Georgia* were imprecise. In 1797, William Jones wrote to Smith, "Sir, the merit is yours. The demerit attaches to the engraver and colourer, for there are some faults." John E. Le Conte, who would later co-author his own illustrated book based largely on Abbot drawings, wrote in 1830 to T. W. Harris about the difficulty in accurately determining "what Smith meant by many of his species [because] his descriptions are so short and many of his figures inaccurate" (Harris correspondence, Ernst Mayr Library of the Museum of Comparative Zoology, Harvard University; microfilm at American Philosophical Society). Lowndes (1834) and Brunet (1865) likewise claimed that the plates in *Insects of Georgia* were not accurate. Strecker (1872–1878) accused the colorists of performing "some funny work" and complained that the adult moth figures on Plate 29 had "no foundation except in the fancy of the person who colored the plates, who doubtless imagined that a little variety introduced would improve the natural plain appearance of the insect." A comparison of published prints for Plate 29 against Abbot's original drawing of *Laothoe juglandis* (J. E. Smith) does indeed show a deviation. The moths on the published plates have brown or reddish-brown forewings with paler yellowish-brown hindwings. Abbot's original figures have less contrasting lighter brown forewings and hindwings. Several other plates show similar deviations in color. As with any early illustrated book, the original drawings are generally more accurate and lack the vicissitudes of subsequent print colorists.

Vellum plates. A most extraordinary copy of *Insects of Georgia* is preserved in the Hargrett Rare Book and Manuscript Library, University of Georgia. The plates in these volumes were printed with black ink on vellum and 15 were signed in pencil "J Harris Pinxt" by engraver John Harris. Harris apparently colored these

prints himself and their quality is far superior to all others, even surpassing that of Abbot's original drawings. Harris imparted a three-dimensional look to the wings of the adult figures and enriched the colors with more vivid tones. The general coloration of the vellum prints is more similar to those in other copies of the book than to the original drawings, suggesting they were created after the drawings were disposed of in 1799. This is supported by the presence of 1801 watermarks on many sheets of white wove paper that were bound into the volumes to protect the vellum plates. The volumes are ornately bound in contemporary red morocco with spine titles that read "Abbot's American Insects." Like the volumes that contain the original drawings, this set was probably bound by Staggemeier & Welcher (Heath 1999) (the binder's ticket was removed from the inside cover of the first volume). The volumes are now protected in a rigid black case that identifies them as "Insects of Georgia/J. Abbot/Printed on Vellum." A penciled note on a free endpaper at the back of the second volume reads, "From the library of Prince Golitzin (see item #303 in 1866 catalogue)." Russian Prince Mikhail Aleksandrovich Golitsyn (1804–1860) was a famous bibliophile who amassed a rich library of early printed books. The faded remnants of Golitsyn's large oval bookplate are visible on a flyleaf of the first volume. A copy of *Insects of Georgia*, presumably the vellum set, was listed in the Golitsyn library catalog (Gunzbourg 1866). Additional bookplates reveal that these volumes changed hands at least three more times. Owners included English school governor Joseph Neeld (1800–1856), antique collector and publisher Moncure Biddle (1882–?), and art collector Mildred Barnes Bliss (1875–1969). The Bliss library served as the foundation for the Harvard University Dumbarton Oaks Research Library (Washington, D.C.). Dumbarton Oaks owned the vellum copy of *Insects of Georgia*, but it was discarded with other butterfly books by a former librarian who considered them to be peripheral to their collections (L. Lott pers. comm.). Fortunately, the University of Georgia acquired this historic set in 1998 from the prominent New York City bookseller Donald A. Heald (Heald 2002–2005).

Larvae and pupae. William H. Edwards (1894) complained, "Abbot's figures, especially of larvae and pupae, are bad as can be." Although Edwards' assessment was based solely on engraved reproductions in Boisduval & Le Conte (1829–[1837]), some of Abbot's original figures of larvae and pupae are equally abysmal. The majority of Abbot's Lepidoptera immatures are accurate, probably having been sketched from living individuals that he reared. Larvae that are

correct in form, yet improperly colored, were possibly derived from inflated (blown) specimens that he was known to provide to interested naturalists. Other figures possess conflicting characters or do not resemble any known species. These seem to have been taken from memory or contrived for the sake of the compositions. For example, the larva that he included in several drawings of *Asterocampa clyton* (Boisduval & Le Conte) is not consistent with any known species, especially *Asterocampa* (Calhoun 2004). As Abbot's knowledge became more sophisticated, he often included more accurate renditions of larvae in his subsequent drawings.

Using a number of published and unpublished references, including Allen et al. (2005) and Wagner (2005), I assessed the accuracy of the early stages depicted on the butterfly plates in *Insects of Georgia* (Table 1). Because variation is expected to occur on the published plates, Abbot's original drawings were also consulted. Except for a few minor departures in color, the published figures do not differ significantly from the originals. Abbot's duplicate figures of the larva and pupa of nine species were published in *Insects of Georgia* and Boisduval & Le Conte (1829–[1837]) (Table 1).

The Plants. Haworth (1807) emphasized the botanical relevance of *Insects of Georgia* when he wrote, "the whole Plants as well as Insects being scientifically delineated and described, that this publication is to the full as valuable to the Botanist, as it is to the Entomologist: we never before beheld the sister sciences walk so closely, and so engagingly hand in hand, as in this interesting volume.—It is truly a *Flora et Entomologia*." Rich (1846) agreed that *Insects of Georgia* was a valuable tool for botanists. In December 1812, botanist Stephen Elliott traveled to Columbia, South Carolina to consult a copy of *Insects of Georgia* in preparation for his landmark treatment, *Sketch of the Botany of South-Carolina and Georgia* (Elliott 1816–1824) (Ewan 1971). Evidence indicates that this is probably the same copy now deposited in the Thomas Cooper Library, University of South Carolina.

Very few early entomological illustrators portrayed hostplants and immature stages of Lepidoptera. Notable exceptions were Maria Sibylla Merian (1647–1717), Eleazar Albin (*fl.* 1690–1742), Benjamin Wilkes (*fl.* 1690–1749), Edward Donovan (1768–1837), and Moses Harris. Many of Abbot's drawings, including all those for *Insects of Georgia*, combined plants with the adults and immatures of insects. Abbot maintained that he was not a botanist, "only an admirer of Nature's Beauties, to meet with a new growing flower or plant much pleases me" (Swainson correspondence, Linnean

Society of London). After a lifetime of rearing larvae on countless plants, his view of botany remained unpretentious. In a letter he wrote to T. W. Harris at the age of 84 he again professed, "I am no Botanist...there is a great variety of flowers in Georgia...I am always much pleased, when I meet with any that is new to me" (Dow 1914).

Despite arguments that Abbot's early botanical renderings were not precise (e.g. Rogers-Price 1983), the plants in his drawings for *Insects of Georgia* are essentially accurate (Britten 1898, M. A. Garland pers. comm.). They are much improved over the hostplant drawings that he completed in London prior to 1773. Abbot illustrated several North American plants for the first time among the drawings for Smith. From these, Smith proposed six new plant taxa in *Insects of Georgia*. Smith confused some other species, such as the milkweed in Plate 6, which he identified as *Asclepias curassavica* L. (Apocynaceae). This plate also portrays the butterfly *Danaus plexippus* (L.). *Euploea curassavicae* Fabricius, a proposed replacement name for this insect, was derived from Smith's identification of the illustrated plant; "Habitat in Americanae meridionalis Asclepiade curassavica" (Fabricius 1938). Smith's determination also misled Ewan (1985), who supposed this exotic plant was firmly established in Georgia by the 1790s. The illustration actually portrays the native butterfly-weed, *Asclepias tuberosa* L. (Apocynaceae).

Botanist Alvan W. Chapman, author of *Flora of the Southern United States* (Chapman 1860), identified the plants figured on the 24 butterfly plates of *Insects of Georgia* (Scudder 1872). Table 1 presents his determinations, as well as current interpretations and nomenclatural updates by Mark A. Garland (Botany Section, Florida Dept. of Agriculture & Consumer Services, Division of Plant Industry). The original identifications of Smith are also given in Table 1. Historical determinations are provided in their original nomenclature. Because of the book's botanical significance, The Missouri Botanical Garden has digitally reproduced their volumes of *Insects of Georgia* and made them available for viewing on the Internet (MBG 1995–2005).

Artist-naturalist Titian R. Peale (1799–1885) met Abbot in 1818 and related to lepidopterist William H. Edwards in 1864 that "caterpillars of all sorts were brought in [to Abbot] by negro boys in Savannah, and he generally only learned what species they belonged to when the butterfly or moth came from the chrysalid or pupa" (dos Passos 1951). Peale was mistaken, as Abbot often wrote of personally collecting larvae and watching females lay eggs to discover the hostplants (Table 1).

Most plants portrayed in his American Lepidoptera drawings have been confirmed as valid hostplants. However, it is well known that some of his associations are erroneous. Over 150 years ago, Guenée (1852) observed that Abbot's plant figures "form a pleasant collection to the eyes, but sometimes do not have the least relationship with those that really nourish the caterpillars" (translation from French). Abbot may have misinterpreted his observations or intentionally figured inappropriate hosts.

Some incorrect hostplant associations were likely based on Abbot's confusion of different species. The drawing for Plate 21 depicts two species (as one) of oak-feeding skippers, *Erynnis brizo* (Boisduval & Le Conte) and either *E. juvenalis* (Fabricius) or *E. horatius*. The plant was described by Smith in the book as a new species, *Glycine elliptica* Smith (Fabaceae), now considered to be a synonym of *Galactia volubilis* (L.) Britton. This plant was also figured in an Abbot drawing used for Plate 65 of *E. brizo* in Boisduval & Le Conte (1829–[1837]) and in an unpublished drawing of *E. juvenalis* in The Natural History Museum, London. In his notes for various *Erynnis* drawings, Abbot referred to "Wild Indigo," presumably a species of *Baptisia* (Fabaceae) (Table 1). This is reinforced by the sprig of *Baptisia* figured in Abbot's unpublished *Erynnis* drawing owned by Smith. Yet another leguminous plant, *Indigofera caroliniana* Mill., is portrayed in an Abbot drawing of *E. brizo* in The Natural History Museum, London. *Erynnis zarucco* (Lucas) and *Erynnis baptisiae* (Forbes) feed on these legumes and occur in the portions of Virginia and Georgia that Abbot explored (Opler 1995), but were not recognized as different species until long after his death. Like many lepidopterists of today, Abbot often had difficulty differentiating the *Erynnis* he encountered. Abbot applied the same figures of early stages to at least three different *Erynnis* species over the years.

Abbot probably reared the larvae of many species in captivity without prior knowledge of their hosts by forcing them to accept plants that are not fed upon in nature. A forced captive rearing is probably responsible for Abbot's drawing of *Atrytone arogos* (Boisduval & Le Conte) with the unconfirmed, yet conceivable, host *Echinochloa crusgalli* (L.) (Poaceae) for Plate 17 of *Insects of Georgia*. The portrayal of *Polygonia interrogatilis* (Fabricius) with *Tilia americana* L. on Plate 11 may also be the result of a captive rearing. Fabricius proposed a new name for this butterfly, *Cynthia tiliae*, based on Smith's identification of the plant on this plate; "Habitat in Americae borealis Tilia alba" (Fabricius 1938). Additional butterfly taxa named by Fabricius (1938) from the hostplants in *Insects of*

Georgia are listed in Table 1.

Regardless of Abbot's abilities, some of his hostplant relationships are simply untenable. His drawing of *Wallengrenia otho* (J. E. Smith) for Plate 16 of *Insects of Georgia* includes a species of blue-eyed grass, *Sisyrinchium* L. (Table 1). Although *W. otho* feeds on grasses (Poaceae), *Sisyrinchium* is not a grass at all, but a member of the irus family (Iridaceae). Abbot's drawing for Plate 23 illustrates the grass-feeding *Lerema accius* (J. E. Smith) with a spectacular blooming branch of the legume *Wisteria frutescens* (L.) Poir. (Fabaceae). The drawing for Plate 24 suggests another implausible association of *Pholisora catullus* (Fab.) with the mint *Monarda punctata* L. (Lamiaceae). *Pholisora catullus* feeds on members of the Amaranthaceae and Chenopodiaceae. Probably in an attempt to verify Abbot's hostplant, Scudder (1888-1889) noted that larvae of *P. catullus* refused to eat a related species of *Monarda*. These three butterflies and their natural hosts are essentially dull and unattractive. In these instances, it seems that Abbot's desire to create appealing compositions transcended his pursuit for accuracy as a naturalist. Such artistic license was not uncommon in entomological art of the eighteenth and early nineteenth centuries. Dutch naturalist M. S. Merian also made "aesthetic decisions" for her drawings that deviated from her own observations (Wettengl 1998). Abbot probably assumed that occasional alterations were necessary to satisfy his customers. The definition of Merian's work by Dance (1978) could just as easily apply to Abbot: they "combined science and art in equal proportions, meeting the demands of art at the expense, when necessary, of science." I have attempted to evaluate the validity of the hostplants in Abbot's butterfly drawings and their accompanying notes for *Insects of Georgia* (Table 1). This was done using numerous references, including Robinson et al. (2002), but was complicated by the perpetuation of unconfirmed reports in the literature. Some of these were undoubtedly derived from the very same records of Abbot.

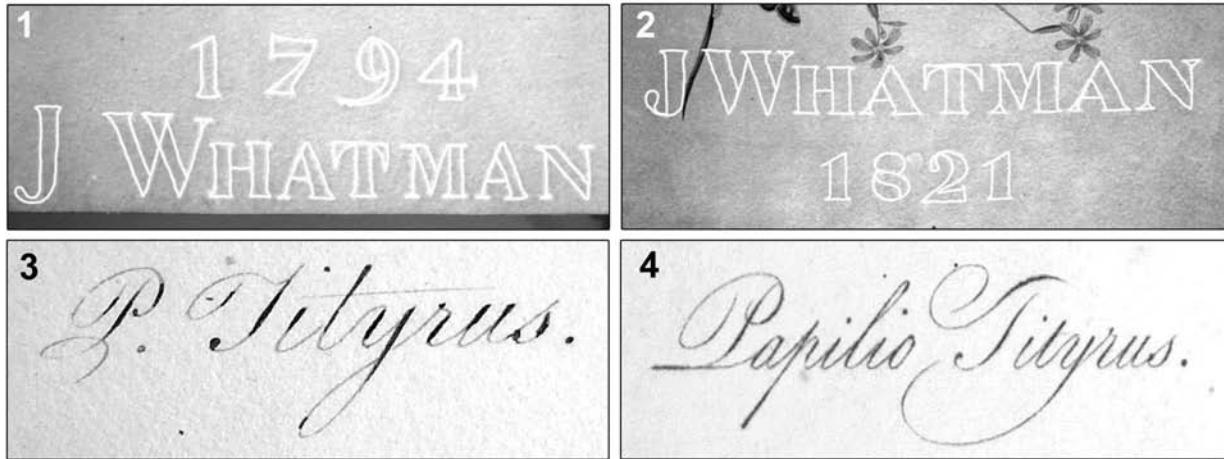
Watermarks. The letterpress and plates of *Insects of Georgia* were printed on fine wove paper from England. Wove paper was invented during the first half of the eighteenth century by English papermaker James Whatman. Wove lacked the furrows of traditional laid paper and was attractive to printers, engravers, and artists. By the 1780s, wove had become more common in paper mills in England and elsewhere. Today, 99 percent of paper is made on a wove wire base (Balston 1992, 1998). *Insects of Georgia* was produced almost exclusively on paper that bears variations of "J Whatman" watermarks.

James Whatman operated his paper mill, called Turkey Mill, at Maidstone, Kent. By the time Whatman died in 1759, Turkey Mill had become the largest paper mill in England (Balston 1992, TM 2004). Whatman's son, James Whatman II, later took possession of Turkey Mill. He sold the business in 1794 to Thomas, Robert, and Finch Hollingworth. The Hollingworths partnered with Whatman's former apprentice, William Balston. This partnership was dissolved in 1807, after which the Hollingworths used "J Whatman/Turkey Mill" watermarks, while Balston used "J Whatman" (Balston 1992). The most famous natural history publication to utilize Whatman paper was *The Birds of America* by John J. Audubon (1827-1838). John Abbot rendered some of his illustrations on Whatman paper. Mariamne Johnes also used this paper for her correspondence with Smith. After 260 years, through the legacy of W. Balston, the Whatman name is still associated with the manufacture of paper (Whatman 2004). The surviving buildings of the Turkey Mill complex have been converted into a business park that currently houses over fifty companies (TM 2004).

Watermarks are extremely useful in addressing questions involving suspected reissues of books and engravings. They are sometimes separated into watermarks (names and dates) and countermarks (designs). I followed the traditional classification and considered all these elements to be watermarks. Dated watermarks were rare in British papers prior to 1794 and were not always updated annually until about 1810 (Balston 1992). Nonetheless, watermarks can be valuable in establishing chronology for copies of *Insects of Georgia*.

Wilkinson (1981, 1982) and Rogers-Price (1983) observed that plates in copies of *Insects of Georgia* had watermarks dated well into the 1820s. Heath (1982, 1990, 1999) and Leab (1984, 1998) listed seven copies with later watermarks. Wilkinson (1982) studied 35 sets of the book and found that many exhibited this disparity. Unfortunately, a planned summary of his findings was not published. Rogers-Price (1983) suggested that the book was reissued after 1827, with work beginning on reprinting the plates after 1817.

In an effort to better understand these watermarks, I attempted to locate and examine as many surviving copies of *Insects of Georgia* as possible. I ultimately found 80 copies in six countries. Through the assistance of numerous librarians and owners, watermark information was recorded for each copy (Table 2). Seventy years ago, Georgia naturalist Lucian Harris, Jr. knew of only three "perfect sets of this rare old work being carefully preserved in Georgia" (Harris 1931). Today, no fewer than nine copies reside in the state.



FIGURES 1-4. Dated watermarks and plate captions from *Insects of Georgia*. 1, “1794/J Whatman” watermark on a letterpress leaf. 2, Balston “J Whatman/1821” plate watermark. 3, Handwritten caption, Plate 19, first issue. 4, Engraved caption, Plate 19, early reissue.

Versions of Whatman watermarks in copies of *Insects of Georgia* are “J Whatman,” “1794/J Whatman,” “J Whatman/18[–],” “J Whatman/Turkey Mills/1817,” and “J Whatman/Turkey Mill/1822” (Figs. 1, 2). Later watermarks are larger; “1794/J Whatman” measure 13 cm × 3.8 cm (5 in × 1.5 in), while “J Whatman/Turkey Mills/1817” measure 26 cm × 9.5 cm (10.25 in × 3.75 in). Regardless of the dates on the plates, the letterpress leaves in all copies of *Insects of Georgia* are watermarked “1794/J Whatman” (Figs. 1, 2). Dates found in association with Whatman watermarks on plates are 1794, 1817, 1820, 1821, 1822, 1823, and 1827 (Table 2). Watermarks usually run lengthwise on the sheets and are located at the fore edges of the leaves or in the gutters near the binding. The year associated with Watermarks of “J Whatman/Turkey Mills (with an “s”) was frequently truncated or completely cropped when the plates were trimmed and bound. Complete “Turkey Mills” watermarks were found to be associated only with the year 1817, thus such marks with unidentifiable dates were listed as “[1817]” on Table 2. Paper with “Turkey Mill(s)” watermarks originated from the Hollingworth operation at Turkey Mill, Maidstone. Paper with “J Whatman” watermarks dated after 1794 originated from the Balston paper mill at nearby Springfield. Similar variations of Whatman watermarks have been documented on plates in Audubon (1827–1838) (Low 2002, Steiner 2003).

The single plate watermarked “J Whatman/1827” was found in a copy of *Insects of Georgia* deposited in the Hargrett Rare Book and Manuscript Library, University of Georgia (Table 2). This set was originally owned by Franklin College, the forerunner of the University of Georgia. Interestingly, at least seven

plates in this copy bear partial watermarks of “& S” and “II”. Such watermarks were also found in copies in the John Carter Brown Library (Brown University), John Hay Library (Brown University), Hill Memorial Library (Louisiana State University), Morris Museum of Art, and the New York Public Library. Plates in these copies are watermarked 1820–1822 (Table 2). All watermarks of “& S,” “S,” and “II” were found in association with the year 1820. I was unable to identify this papermaker. Even a contact at the British Association of Paper Historians was unfamiliar with these watermarks. These copies of the book may have been among the last assembled, utilizing less expensive paper to complete the plates for these volumes. Flyleaves in a reissue copy in the Library of Congress (Table 2) bear watermarks of “W. Venables/1824.” These blank pages were most likely added by the bookbinder. Other surviving reissues probably also contain a mixture of papers, but consist mainly of Balston and Hollingworth product (as “J Whatman”). American lepidopterist William J. Holland may have been aware of later watermarks, including the 1817 dates in his own personal copy now in the Carnegie Museum of Natural History. In Holland (1898), he did not say that the book was published in 1797, but rather that it “appeared in two folio volumes, bearing the date of 1797.”

Plate captions. Dunthorne (1938) observed that plates of *Insects of Georgia* were irregularly produced without numbers and names. I compared plate captions in 23 copies of the book (Table 3) and discovered that their presence and position is variable, particularly in copies with watermarks dated later than 1794. These elements are engraved on some plates and handwritten on others. Many lack plate captions entirely.

TABLE 2. Dated plate watermarks in copies of *Insects of Georgia*. State of plates 77 & 78: 1 = uncorrected; 2 = corrected.

Repository	No. copies	Dates recorded	States of plates 77 & 78
1. American Museum of Natural History Research Library (New York, New York)	1	1820, 1821, 1822	
2. Atlanta History Center (Atlanta, Georgia)	1	1794, 1820, 1821, 1822	77: 1, 78: 1
3. Bancroft Library, University of California, Berkeley (Berkeley, California)	1	1794	
4. Beinecke Rare Book and Manuscript Library, Yale University (New Haven, Connecticut)	1	[1817], 1822	7: 1, 78: 1
5. Bibliothèque Nationale de France [National Library of France] (Paris, France)	1	1794	
6. Bio-medical Library, University of Minnesota (Minneapolis, Minnesota)	1	1794	
7. Birmingham Public Library (Birmingham, Alabama)	1	1794	
8. Bodleian Library, Oxford University (Oxford, England)	1	1794	77: 2, 78: 2
9. British Library (London, England)	3	1794 (all copies)	77: 2, 78: 2 (all copies)
10. Buffalo & Erie County Public Library (Buffalo, New York)	1	1817	
11. Canadian Agriculture Library (Ottawa, Ontario, Canada)	1	none found	
12. Carl A. Kroch Library, Cornell University (Ithaca, New York)	1	1794	
13. Carnegie Museum of Natural History Library (Pittsburgh, Pennsylvania)	1	1817	77: 1, 78: 1
14. Charleston Library Society (Charleston, South Carolina)	1	1794	
15. Doheny Memorial Library, University of Southern California (Los Angeles, California)	2	copy 1: 1794 copy 2: [1817], 1821, 1822	
16. Ellis Library, University of Missouri-Columbia (Columbia, Missouri)	1	1822	77: 1, 78: 2
17. Entomology Library, The Natural History Museum, London (London, England)	2	copy 1: 1794 copy 2: 1821, 1822	77: 2, 78: 2 77: 1, 78: 1
18. Ernst Mayr Library of the Museum of Comparative Zoology, Harvard University (Cambridge, Massachusetts)	1	1794, 1817	77: 1, 78: 1
19. Ewell Sale Stewart Library, The Academy of Natural Sciences of Philadelphia (Philadelphia, Pennsylvania)		1794, 1817	77: 1, 78: 1
20. Fitzwilliam Museum (Cambridge, England)	1	1794	77: 2, 78: 2
21. Hamilton Library, University of Hawai'i (Manoa, Hawai'i)	1	1794	77: 2, 78: 1
		copy 1: 1794, 1820, 1821, 1822, 1827	77: 1, 78: 2
22. Hargrett Rare Book and Manuscript Library, University of Georgia (Athens, Georgia)		copy 2: 1794, 1817, 1821, 1822, 1823	77: 2, 78: 1
		copy 3: 1794	77: 2, 78: 2
	4	copy 4: none (vellum) plate guards 1801	77: 2, 78: 2
23. Hill Memorial Library, Louisiana State University (Baton Rouge, Louisiana)	1	1794, 1820, 1821, 1822	77: 1, 78: 2
24. Hope Library of Entomology, Oxford University (Oxford, England)	1	1794	77: 2, 78: 2
25. Houghton Library, Harvard University (Cambridge, Massachusetts)	1	1794	

TABLE 2. (continued) Dated plate watermarks in copies of *Insects of Georgia*. State of plates 77 & 78: 1 = uncorrected; 2 = corrected.

Repository	No. copies	Dates recorded	States of plates 77 & 78
26. Howard-Tilton Memorial Library, Tulane University (New Orleans, Louisiana)	1	1794	
27. Ina Dillard Russell Library, Georgia College & State University (Milledgeville, Georgia)	1	1794	
28. John Carter Brown Library, Brown University (Providence, Rhode Island)	1	1820, 1821, 1822	
29. John Crerar Library, University of Chicago (Chicago, Illinois)	1	1820, 1822	77: 1, 78: 2
30. John Hay Library, Brown University (Providence, Rhode Island)	1	1820, 1821, 1822	
31. John Hinchliff, personal library of Florence Hinchliff (Portland, Oregon)	1	none found	
32. John M. Olin Library, Washington University (St. Louis, Missouri)	1	1794	
33. John Rylands University Library of Manchester (Manchester, England)	1	1794	
34. John V. Calhoun, personal library (Palm Harbor, Florida)	1	1794, [1817], 1821, 1822	77: 1, 78: 1
35. Joseph F. Cullman 3rd Library of Natural History, Smithsonian Institution	1	1794	77: 2, 78: 2
36. Library and Archives Canada (Ottawa, Ontario, Canada)	1	1794, 1820, 1821, 1822	
37. Library of Congress (Washington, D.C.)	1	1794, 1821, 1822, 18[23]	77: 2, 78: 1
38. Linnean Society of London (London, England)	1	1794	77: 2, 78: 2
39. Lucy Lester Willet Memorial Library, Wesleyan College (Macon, Georgia)	1	1794, [1817], 1821, 1822	
40. The LuEsther T. Mertz Library, The New York Botanical Garden (New York, New York)	1	none found	77: 1, 78: 1
41. Macdonald Campus Library, McGill University (Montreal, Quebec, Canada)	1	1794	77: 2, 78: 1
42. McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, Univ of Florida, (Gainesville, Florida)	1	1794	77: 2, 78: 2
43. Memorial Library, University of Wisconsin (Madison, Wisconsin)	1	1821, 1822, 1823 (flyleaves 1824)	77: 1, 78: 1
44. Michigan State University Library (East Lansing, Michigan)	1	1794	77: 2, 78: 2
45. Missouri Botanical Garden Library (St. Louis, Missouri)	1	1794	77: 2, 78: 2
46. Morris Museum of Art (Augusta, Georgia)	1	1820, 1821, 1822	77: 2, 78: 2
47. National Agriculture Library (Beltsville, Maryland)	1	[1817]	77: 1, 78: 1
48. New York Public Library (New York, New York)	1	1820, 1821, 1822	
49. Niedersächsische Staats- und Universitätsbibliothek Göttingen [Göttingen State and University Library] (Göttingen, Germany)	1	1794	
50. Olin Memorial Library, Wesleyan University (Middletown, Connecticut)	1	1794	77: 2, 78: 2
51. Österreichische Nationalbibliothek [Austrian National Library] (Vienna, Austria)	1	1794	
52. Parks Library, Iowa State University (Ames, Iowa)	1	1794	77: 2, 78: 2

TABLE 2. (continued) Dated plate watermarks in copies of *Insects of Georgia*. State of plates 77 & 78: 1 = uncorrected; 2 = corrected.

Repository	No. copies	Dates recorded	States of plates 77 & 78
53. Pennsylvania Hospital Medical Library (Philadelphia, Pennsylvania)	1	1794	77: 2, 78: 1
54. Public Library of Cincinnati and Hamilton County (Cincinnati, Ohio)	1	1822	77: 1, 78: 2
55. Radcliffe Science Library, Oxford University (Oxford, England)	1	1794	77: 2, 78: 2
56. Rare Book, Manuscript and Special Collections Library, Duke University (Durham, North Carolina)	1	[1817], 1821, 1822	77: 2, 78: 1
57. Royal Entomological Society Library (London, England)	1	1794	77: 2, 78: 2
58. Sächsische Landesbibliothek-Staats- und Universitätsbibliothek Dresden [Saxon State Library and University Library] (Dresden, Germany)	1	1794	
59. South Caroliniana Library, University of South Carolina (Columbia, South Carolina)	1	1817	77: 1, 78: 1
60. Sutro Library, California State Library (San Francisco, California)	1	[1817]	77: 1, 77: 1
61. Tampa-Hillsborough County Public Library (Tampa, Florida)	1	1817	77: 1, 77: 1
62. Thomas Cooper Library, University of South Carolina (Columbia, South Carolina)	1	1794	77: 2, 78: 2
63. Thomas J. Dodd Research Center, University of Connecticut (Storrs, Connecticut)	1	1794	77: 2, 78: 2
64. Thomas Rare Book Library, Wittenberg University (Springfield, Ohio)	1	1794	77: 2, 78: 2
65. Tracy W. McGregor Library, University of Virginia (Charlottesville, Virginia)	1	1817	
65. University College of London (London, England)	1	1794	77: 2, 78: 1
66. University Library, University of Cambridge (Cambridge, England)	2	copy 1: none found copy 2: 1794, [1817]	77: 2, 78: 2 77: 1, 78: 1
67. University of Illinois Library (Urbana-Champaign, Illinois)	1	1794, 1820, 1821, 1822, 1823	77: 1, 78: 1
68. W. E. B. Du Bois Library, University of Massachusetts (Amherst, Massachusetts)	1	1817	77: 1, 78: 1
69. Warren N. Baggett, printseller (Franklin, Tennessee) (plates sold 2003–2004)	1	1817	
70. Wilson Library, University of North Carolina (Chapel Hill, North Carolina)	1	1794	77: 2, 78: 2
71. Woodruff Library, Emory University (Atlanta, Georgia)	1	1822, 1823	
Book auction records	1		
1. 20 November 1981 (Heath 1982, Leab 1984)	1	1821, 1822	
2. 8 December 1989 (Heath 1990)	1	1820, 1822	
3. 14 June 1990 (Heath 1990)	1	1794, 1820, 1821, 1822	
4. 15 June 1990 (Heath 1990)	1	1820, 1822, 1823	
5. 1993 (McGrath 1993)	1	1794	
6. 3 June 1997 (Leab 1998, Heath 1999)	1	1817	
7. 13 June 2002 (Christie's 2002)	1	“later issue” (dates unknown)	
8. 19 November 2003 (Christie's 2003)	1	“later issue of around 1822”	

TABLE 3. Captions on plates in copies of *Insects of Georgia*. Copies marked by an asterisk (*) were personally examined (digital photos for copy 18). Plates that lack captions are not listed.

Copy examined	Watermarks	Handwritten ink captions	Engraved captions
1. Bodleian Library, Oxford University (Oxford, England)	1794	none	1-104
2. Charleston Library Society (Charleston, South Carolina)	1794	1-3, 5, 7-54, 56-104 (Plate 4 missing)	6
3. Entomology Library, The Natural History Museum, London (London, England) (copy 1)*	1794	1-104	none
4. Entomology Library, The Natural History Museum, London (London, England) (copy 2)*	[1817], 1821, 1822	42, 57, 77	2, 3, 5, 7, 9, 11, 13, 16, 17, 20-22, 24, 31, 33, 36, 38, 51, 54, 56, 58, 60, 66, 68, 70, 72-76, 84-87, 89, 90, 93-104
5. Ewell Sale Stewart Library, The Academy of Natural Sciences of Philadelphia (Philadelphia, Pennsylvania)*	1794, 1817	10, 40, 42, 57, 77, 82, 91, 97, 104	5, 7, 9, 11-16, 18-21, 26-32, 34, 35, 37, 39, 41, 43, 44, 47-50, 52-55, 58-61, 63-65, 67, 69, 71-74, 76, 79-81, 83, 85-87, 90, 92, 94-96, 98-100, 103
6. Hargrett Rare Book and Manuscript Library, University of Georgia (Athens, Georgia) (copy 1)*	1794, 1820, 1821, 1827	none	1-6, 8-11, 13, 14, 16-19, 21, 22, 24, 25, 27-34, 36-38, 41, 42, 44-46, 49-52, 54-60, 63-77, 79, 80, 83-104 (Plates 7, 48 missing)
7. Hargrett Rare Book and Manuscript Library, University of Georgia (Athens, Georgia) (copy 2)*	1794, 1817, 1821, 1822, 1823	none	2, 3, 5, 7, 8, 10, 11, 13, 16-18, 20-22, 24, 25, 27-33, 35, 38-40, 50-60, 67, 69, 70, 72-74, 76, 77, 79, 81-90, 93-104
8. Hargrett Rare Book and Manuscript Library, University of Georgia (Athens, Georgia) (copy 3)*	1794	58, 78	1-5, 7, 9-57, 59-77, 79-83, 85-104
9. Hargrett Rare Book and Manuscript Library, University of Georgia (Athens, Georgia) (copy 4)*	none; vellum (plate guards 1801)	None	1-104
10. Hill Memorial Library, Louisiana State University (Baton Rouge, Louisiana)	1794, 1820, 1821, 1822	None	2-8, 10, 11, 13, 14, 16-24, 28-30, 33, 35-38, 41, 42, 44, 46-56, 58-60, 63-74, 76, 78-98, 100-104
11. Howard-Tilton Memorial Library, Tulane University (New Orleans, Louisiana)*	1794	1-104	none
12. Ina Dillard Russell Library, Georgia College & State University (Milledgeville, Georgia)	1794	1-104	none
13. John V. Calhoun, personal library (Palm Harbor, Florida)*	1794, [1817], 1821, 1822	10, 15, 42, 54, 77	2, 3, 5, 7, 11, 16, 17, 20-22, 24, 31, 33, 36, 38, 51, 54, 56, 58, 60, 62, 66, 68, 70, 72-74, 76, 84-87, 89, 90, 93-104
14. Joseph F. Cullman 3rd Library of Natural History, Smithsonian Institution (Washington, D. C.)*	1794	1-104	none
15. Library of Congress (Washington, D. C.)*	1794, 1821, 1822, 18[23]	None	2-7, 10, 11, 13, 14, 16-18, 20-22, 24, 25, 27-33, 36, 38, 39, 42, 44, 46, 47, 50-60, 66, 67, 69, 70, 72-74, 76, 77, 79, 82-90, 92-104
16. Linnean Society of London (London, England)*	1794	79	1-7, 9-78, 80-104
17. McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, University of Florida (Gainesville, Florida)*	1794	None	1-104
18. Missouri Botanical Garden Library (St. Louis, Missouri)*	1794	None	1-104
19. Royal Entomological Society Library (London, England)	1794	72	1-71, 73-104
20. South Caroliniana Library, University of South Carolina (Columbia, South Carolina)*	1817	None	1-27, 29-32, 34, 35, 37, 39, 41-46, 48-50, 52-55, 57-61, 63-65, 67, 69-74, 76, 80-104
21. Tampa-Hillsborough County Public Library (Tampa, Florida)*	1817	77	1-4, 6-32, 34, 35, 37, 41-50, 52-55, 57-61, 63, 65, 67, 70-74, 76, 80-90, 92-104
22. Thomas Cooper Library, University of South Carolina (Columbia, South Carolina)*	1794	10, 33	1-9, 11-32, 34-104
23. Thomas Rare Book Library, Wittenberg University (Springfield, Ohio)	1794	None	1-104

Plates in copies 1–3, 8, 11, 12, 14, 16–19, 22, and 23 (Table 3) are watermarked 1794. The plates in copies 3, 11, 12, and 14 have handwritten numbers at the head (top) of the sheets and handwritten Latin insect names centered at the foot (bottom). These captions were inscribed in black ink by at least two calligraphers and the Latin genus names are almost always abbreviated (Fig. 3). Only in rare instances is the genus written out completely. The names were drafted in pencil with horizontal guidelines and overwritten in ink, after which the guidelines were erased. This process is clearly demonstrated by the unfinished name on Plate 70 in copy 13, which is written in pencil and still includes guidelines. Faint traces of guidelines are also present on plates in other copies of the book. All such plates bear watermarks of “1794/J Whatman” or undated watermarks of “J Whatman” suggestive of paper manufactured prior to 1794. The etched signature of John Harris is rarely present at the foot of plates that have handwritten captions.

The plates in copies 1, 17, 18, and 23 have engraved captions (Fig. 4). Copy 18 is currently available for viewing on the Internet (MBG 1995–2005). The captions on the vellum plates at the University of Georgia (copy 9) are also engraved. Engraved captions include a small number at the head of the sheet, a full Latin insect name at the left foot, and a full Latin plant name at the right foot. Plate 68 lacks a plant name in all copies because the plant was not identified in the corresponding letterpress. Engraved captions are identical between the same plates in different copies of the book, regardless of watermarked dates. At least two letter engravers were responsible for adding these elements to the copper plates. The etched signature of John Harris is present at the foot of many more of these plates than those with handwritten captions or none at all. A memorandum about the book by J. E. Smith, dated 19 February 1798, is inserted into copy 1 (see below). The captions in this copy are engraved, thus captions were evidently added to the copper plates prior to February 1798.

Copies 8, 16, 19, and 22 are primarily comprised of plates with engraved captions, but they also contain several plates with captions that are handwritten and/or lacking. Copy 16 was assembled within ten years after 1797, as it was presented to the Linnean Society between 1805 and 1807 (Anonymous 1807a). Copy 20 was listed in an 1807 catalog of books belonging to the South-Carolina College (now Univ. of South Carolina) (Anonymous 1807b) and was likewise produced within ten years after the first printing. Copy 2 is just the opposite, with only one plate bearing engraved captions. Captions were engraved at the wrong end of the copper

plate for Plate 30, resulting in an inverted image when the finished prints were bound (it is correctly oriented on plates with handwritten captions). The captions on Plate 53 were also engraved incorrectly, but this can probably be attributed to Smith who wrote notations on the wrong end of the original drawing.

Plates in copies 4–7, 10, 13, 15, 20, and 21 (Table 3) are watermarked with a variety of dates. These plates are much more irregular, with captions that are engraved, handwritten, or lacking entirely. Caption variability is greatest in copies watermarked later than 1817. Copies 4 and 13 are extraordinarily similar and were probably assembled at the same time; the mixture of plates, board decorations, and yellow marbled endpapers are comparable.

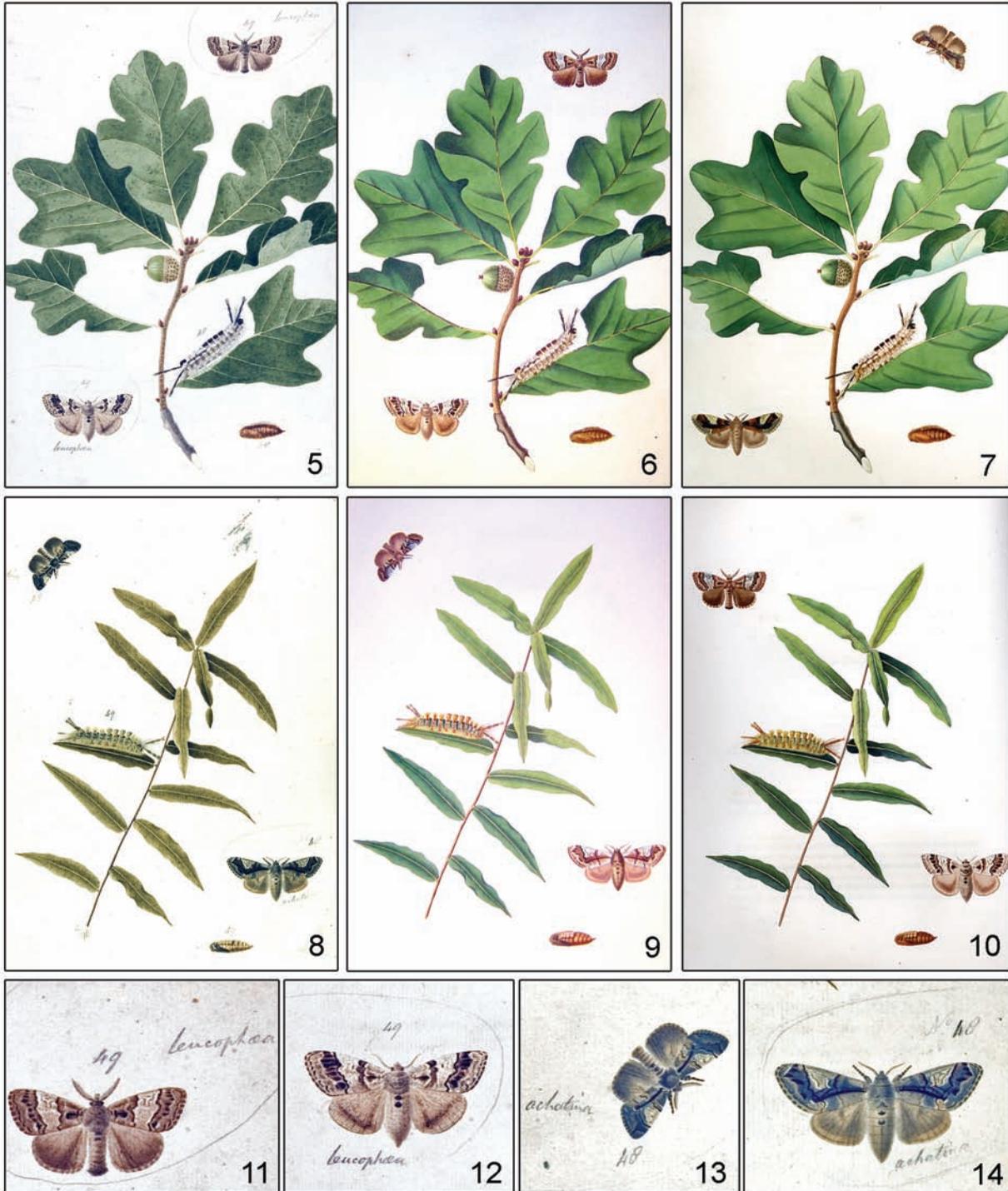
The *Dasychira* discrepancy. The letterpress for Plate 77 in *Insects of Georgia* described *Phalaena achatina* J. E. Smith, treated by Ferguson (1978) as a synonym of *Dasychira meridionalis* (Barnes & McDunnough). However, the adult figures on the accompanying plate are more consistent with *Dasychira basiflava* (Packard). Ferguson (1978) also observed that these figures resembled *D. basiflava*, but he was unaware of valid records of the species from Georgia where it is now known to occur. Although described earlier than *D. basiflava*, *P. achatina* is a junior homonym and not an available name for this species (Ferguson 1978).

The letterpress for Plate 78 described *Phalaena leucophaea* J. E. Smith, now recognized as *Dasychira leucophaea*. The figured female is consistent with *D. leucophaea*, but the male more closely resembles *Dasychira manto* (Strecker). Abbot's association of two different species is understandable, given that *D. manto* was not recognized until 1900. Fortunately, Ferguson (1978) designated the female specimen figured on Plate 78 as the lectotype of *P. leucophaea*.

After consulting a copy of *Insects of Georgia*, Thaddeus W. Harris identified a species of moth as “the *leucophaea*...figured in Mr. Abbot's sumptuous work on insects of Georgia” (Harris 1841). However, Harris' descriptions of the adults and early stages are not consistent with the figures of *P. leucophaea*, but rather those of Smith's *P. achatina*. Harris had reversed the identity of these moths. Over a century later, Ferguson (1978) noted that Plates 77 and 78 appeared to be reversed in a copy of *Insects of Georgia* that he consulted in the Beinecke Library, Yale University. Rogers-Price (1983) also observed this discrepancy in various copies. My analysis of these plates showed them to conform to the adjacent letterpress in most copies of the book that bear only 1794 watermarks. However, the majority of copies with later watermarks appeared to

have these plates reversed. A closer inspection revealed that the plates themselves were not reversed, only the figures of the adult moths (Figs. 6, 7, 9, 10).

For insight into these alterations, I consulted Abbot's original drawings. The adult figures in both drawings are circled and named in pencil in Smith's hand (Figs.



FIGS. 5-14. Original drawings and plates of *Dasychira* from *Insects of Georgia*. 5, Original drawing for Plate 77°. 6, Uncorrected Plate 77. 7, Corrected Plate 77. 8, Original drawing for Plate 78°. 9, Uncorrected Plate 78. 10, Corrected Plate 78. 11, Original male of *P. leucophaea* (*D. manto*?) (annotations by J. E. Smith)°. 12, Original female of *P. leucophaea*°. 13, Original male of *P. achatina* (*D. basiflava*)°. 14, Original female of *P. achatina* (*D. basiflava*)°. (*The John Work Garrett Library of the Johns Hopkins University).

11–14). The adults on the drawing used for Plate 77 are identified as “*leucophaea*” and those on the drawing for Plate 78 are identified as “*achatina*.” On the drawing for Plate 77, Smith also labeled the plant and early stages as “48” and the adult moths as “49.” He wrote just the opposite on the drawing for Plate 78.

Abbot's manuscript at the Linnean Society holds the

key to understanding Smith's mysterious notations and plate alterations. The numbers “48” and “49” correspond to Abbot's entries for these drawings. Under entry no. 49 (page 22) Abbot wrote, “These is misplaced by mistake, too late to remedy it in the Drawing. That is the Worm & Chrysalis, & Description of No. 48 ought to be put to the Moths No. 49. And the

TABLE 4. “Corrections & Emendations” for Insects of Georgia by J. E. Smith, 1798 (Bodleian Library, Oxford University).

Plate no.	Depicted insect species	Comments by Smith
11	<i>Polygonia interrogationis</i> (Fabricius)	<i>Tab. 11. This, I am now convinced, is a distinct species from the true Papilio C aureum of Linnaeus, and may be called Papilio C fractum. P. N. alis dentatis caudatis fulvis nigro maculatis: posticis subtus C argenteo diffracto notatis. P. C aureum Fab. Ent. emend. V. 4. 78.</i>
	NOTES: Smith was correct, but he failed to publish his new name. Fabricius published his description of <i>Papilio interrogationis</i> that same year. Smith's Latin narrative is a modified version of Fabricius' description of <i>C. aureum</i> with added emphasis on the two-part silvery spot (“argenteo diffracto notalis”) on the ventral hindwing. Harris (1841) compared this spot to a semicolon, but Fabricius' name implies a question mark (hence the species' current English name, “Question Mark”). “P. N.” refers to the Linnean classification categories of “Papilio” and “Nymphales.”	
13	<i>Neonympha areolatus</i> (J. E. Smith)	<i>Tab. 13. Papilio areolatus, Is supposed by some very intelligent critic, who reviewed this work in the Analytical Review for Jany. 1798, to be Pap. Canthus Linn. Syst. Nat. 768. Fab. Ent. emend. V. 4. 157, of which there is no specimen in the Linnaean cabinet, so that I cannot determine the point.</i>
	NOTES: The reviewer wrote, “of the thirteenth plate...we cannot help recognizing the <i>canthus</i> of Linné and Fabricius...The more detailed description of Fabricius confirms the identity of the insect in question” (Anonymous 1798). Smith, however, was correct to describe this as a new species. <i>Papilio canthus</i> Linnaeus is a junior synonym of <i>Satyrodes eurydice</i> (L.).	
15	<i>Celastrina neglecta</i> (W. H. Edwards)	<i>Tab. 15. Papilio Argiolus. Mr. Jones rather believes this a new species, distinct from the Argiolus of Linnaeus.</i>
	NOTES: Smith was referring to a letter he received from William Jones dated 9 Sept. 1797 (Linnean Society of London), in which Jones argued, “You are certainly wrong in naming the fly <i>Argiolus</i> Tab. 15. I have both male and female among my drawings without a name. <i>Argiolus</i> is certainly different.”	
32	<i>Agrius cingulatus</i> (Fabricius)	<i>Tab. 32. Sphinx Convolvuli. The abovementioned writer in the Analytical Review thinks the insect in this plate the S. cingulata Fab. V. 4. 375, with whose description indeed it admirably accords. If so, Fabricius should have quoted Drury V. 1. t. 25. f. 4 under his cingulata, & not under Convolvuli. I still however think it scarcely more than a variety of the latter.</i>
	NOTES: The reviewer was correct, asserting, “in our eyes it appears to answer in every respect to the <i>cingulata</i> of Fabricius” (Anonymous 1798). <i>Agrius convolvuli</i> (Linnaeus) is an Old World species that does not occur in North America. As noted by Smith, the figure in Drury (1770-1782) represents <i>A. cingulatus</i> , not <i>A. convolvuli</i> .	
33	<i>Manduca sexta</i> (Linnaeus)	<i>Tab. 33. Sphinx Carolina. The same writer observes that this species ought to be defined abdomine ocellis quinque parium fulvis, not sex parium. There are however in some specimens rudiments of a sixth pair.</i>
	NOTES: The reviewer firmly stated, “It is surely time to expunge the six yellow pairs of spots that still continue to figure away on the abdomen of this sphinx in the systems, and to substitute five” (Anonymous 1798). Smith's interpretation was more accurate. <i>Sphinx carolina</i> Linnaeus is a junior synonym of <i>Manduca sexta</i> , whose name refers to the usual presence of six (“sex”) pair of fulvous abdominal spots. The reviewer likely confused this species with the similar <i>Manduca quinquemaculata</i> (Haworth), which usually has five (“quinque”) pair of abdominal spots, but was not described until 1803.	
34	<i>Manduca rustica</i> (Fabricius)	<i>Tab. 34. Sphinx Chionanthi. He remarks also that this insect cannot be the same with Merian's Tab. 5, which, considering the description of the larva, & the account given of the devastation it makes in fields of Cassava, must be taken for the rustica of Fabricius. The name Chionanthi will therefore remain with ours, as a species hitherto nondescript. I had not Merian at hand when I described it.</i>
	NOTES: It was the reviewer's opinion that “with respect to <i>rustica</i> ...it is clear, that the insect represented by Merian on tab. V, and referred to by Fabricius, in his Ent. Emend. iv, 366, cannot be the same with the sph. <i>chionanti</i> [sic]” (Anonymous 1798). These taxa are now considered to be synonymous. The adult moth on Plate 5 in Merian (1705) does appear to be <i>M. rustica</i> .	
91	<i>Catocala vidua</i> (J. E. Smith)	<i>Tab. 91. Phalaena Vidua. The reviewer supposes this Noctua Epione of Fabricius, but I think it scarcely accords with his description or Cramer's figure.</i>
	NOTES: The reviewer briefly remarked, “ <i>vidua</i> , or what we should call <i>epiope</i> [sic]” (Anonymous 1798). <i>Catocala vidua</i> and <i>Catocala epione</i> (Fabricius) are still recognized as separate species. As Smith observed, the dorsal figure in Cramer (1775-1782, Plate 102, fig. E) is most consistent with <i>C. epione</i> .	

Worm Chrysalis & Description of this No. 49th to No. 48." Abbot believed that he had mistakenly transposed the early stages of these species.

Abbot did not suggest that the hostplants were reversed in his drawings for these plates. In fact, he seems to have correctly associated the plants with the adult moths. The hostplant in the drawing for Plate 77 is a species of oak, possibly *Quercus stellata* Wangeh. (Fagaceae). The female moth in this drawing, *D. leucophaea*, is an oak-feeder. The male, if *D. manto*, feeds on pine (Pinaceae) (Ferguson 1978). The drawing for Plate 78 depicts a species of Willow, most likely *Salix nigra* Marshall (Salicaceae). The moths in the drawing seem to be *D. basiflava*, which will feed on willow (Ferguson 1978). It would have been far easier, cheaper, and more accurate had Smith left the copper plates as originally etched and simply colored the early stages to resemble the opposite species.

I investigated Plates 77 and 78 in 52 copies of the book (Table 2). All 25 copies bearing only 1794 watermarks contain corrected versions of the plates that rectified Abbot's error. Twenty of these copies include both corrected plates. Conversely, just nine of the 24 copies with later watermarks contain a corrected plate and only one includes both. Two copies have no perceptible watermark dates, but one copy includes both corrected plates. The vellum copy at the University of Georgia has corrected plates. All the prints of Plates 77 and 78 that I personally examined bear only 1794 watermarks. Twelve copies examined during this study possess mixed versions of these plates, absentmindedly including two illustrations of the same species. All the copies examined with watermarks of 1817 or later have captions that are handwritten or lacking on Plates 77 and 78.

Despite Abbot's admitted mistake, the copper plates were initially etched to reproduce the drawings as originally rendered. The moth figures were later re-etched on the same copper plates to correct the error. Small imperfections on both versions of the plates show that the remaining figures were unchanged. Corrected plates were struck with and without engraved captions, thus the moths were re-etched before the captions were permanently added. Calligraphers were sometimes so confused about these plates that they incorrectly wrote the opposite names and numbers on early prints that lacked engraved captions.

Although Abbot advised that his notes for these drawings were also mistakenly reversed, this was not corrected for the book. Abbot combined adults with the "proper" immatures in other sets of drawings. The copy of *Insects of Georgia* that Harris (1841) used to identify *D. leucophaea* was obviously a later reissue with

uncorrected versions of Plates 77 and 78, thereby misleading him on the identity of *D. leucophaea*.

Corrections & Emendations. A two-page handwritten memorandum by J. E. Smith entitled "Corrections & Emendations" was discovered in the first volume of *Insects of Georgia* in the Bodleian Library, Oxford University. Signed "J E Smith" and dated "Norwich Feb. 19. 1798," it is the only known document of its kind. Smith wrote to his wife from Oxford on 26 April 1798 and mentioned that he was visiting the "Sherardian Library," now part of the Oxford University herbaria (Smith correspondence, Linnean Society of London). He may have presented this copy of the book at that time.

Smith's comments are mostly in response to an anonymous review of *Insects of Georgia* that was published a month earlier (Anonymous 1798). Smith reconsidered some of his identifications in the book and proposed a new Latin name for the butterfly on Plate 11. The memo was written about six months after the book first appeared and offers valuable insight into Smith's perception of seven species. Few British naturalists of the period could have penned such an erudite review of *Insects of Georgia*. The author, whom Smith called "some intelligent critic," was most likely Edward Donovan, who was actively engaged in publishing books on British and foreign insects at that time. Donovan's prose was similarly eloquent and he was prone to extensive footnoting, which is also evident in the review. Donovan was a great admirer of Linnaeus and Fabricius, who were often mentioned in the review, particularly within the footnotes. Moreover, Donovan (1798) discussed *Insects of Georgia* and mentioned the work of Abbot, acknowledging, "our cabinet is indebted to his labours for several hundred species, altogether new in Europe." The remarks of Smith and the reviewer are reproduced in Table 4.

Spine titles and authorship. Surviving copies of *Insects of Georgia* that are thought to possess original bindings vary considerably in how the title and author were printed on the spine. Copies attributed to early issues often exhibit very similar titles, such as "Smith's American Insects," "Abbot's American Insects," "Abbot's and Smith's American Insects," and "Insects of America." The binding on the original drawings given to Mariamne Johnes is consistent with other early copies, reading "Smith's American Insects." The copy with the vellum plates reads "Abbot's American Insects." Spine titles on later copies are more variable, reading "Insects of Georgia," "Lepidopterous Insects," "Lepidopterous Insects of Georgia," "Natural History of Insects," and "Natural History of Lepidopterous Insects." Author designations also vary, with later copies

often citing them separately from the title, as “Abbot,” “Smith,” or “Smith & Abbot.” These differences probably reflect the changing titles on the printer's boards over the many years that the book was issued and bookbinders simply reproduced them as given.

Irregular author attributions are also reflected in the literature, with most crediting Smith & Abbot, Abbot & Smith, or just Smith. In the preface of the book, Smith characterized himself as merely the “Editor,” leading Kirby & Spence (1815–1826) to cite the book as “Smith's Abbott's *Insects of Georgia*.” Westwood (1840) could not decide who the senior author was, citing both Smith & Abbot and Abbot & Smith. Duncan (1841) considered Smith to be the junior author who “superintended the arrangement.” Since about 1980, the book trades have consistently credited Abbot or Abbot & Smith in sales lists and catalogs. I have followed dos Passos (1958) and Wilkinson (1981) who awarded authorship to Smith (as editor) and Abbot (as artist/observer). The double-t spelling of Abbot's name remains a common error. Some authors, such as Westwood (1840) and Audubon (1838), included both the correct and double-t versions within the same publications. The incorrect spelling is even printed on the spines of some copies of *Insects of Georgia*.

Ownership. Over the years, there have been many distinguished owners of *Insects of Georgia*. Many were British, Irish, or Russian royalty, who ranked among the few that could afford such an expensive luxury. Bookplates in surviving copies reveal the following aristocratic owners (numbers correspond to copies in Table 2): Count Nikolai Petrovich Sheremetev (1751–1809) (27), Richard, VII Viscount Fitzwilliam of Merrion (1745–1816) (20), Valentine Browne, 1st Earl of Kenmare (1754–1812) (26), George John, 2nd Earl Spencer (1758–1834) (33), Walter Francis Montagu-Douglas-Scott, 5th Duke of Buccleuch and Queensberry (1806–1884) (25), William Willoughby Cole, 3rd Earl of Enniskillen (1807–1886) (65), Thomas de Gray, 6th Baron of Walsingham (1843–1919) (46), Count Sergei Dmitrievich Sheremetev (1844–1918) (27), and Lionel Walter Rothschild, 2nd Baron Rothschild of Tring (1868–1937) (17, copy 2). Other notable owners were Georgia philanthropist Wymberley Jones De Renne (1853–1926) (22, copy 3), Harvard zoologist Walter Faxon (1848–1920) (18), Icelandic entrepreneur Hjörtur Thórdarson (1867–1945) (43), and Coca-Cola President Charles Howard Candler (1878–1957) (71). Entomologists, both professional and amateur, who possessed personal copies include William Jones (?–1818) (lost?), Jean B. A. D. de Boisduval (1799–1879) (Guenée 1852; lost?), Thomas B. Wilson (1807–1865) (19), William J. Holland (1848–1932) (13),

Ellison A. Smyth, Jr. (1863–1941) (42), William Barnes (1860–1930) (35), Edward O. Essig (1884–1964) (3), Cyril F. dos Passos (1887–1986) (64), Lionel G. Higgins (1891–1985) (31), and John Hinchliff (1915–1999) (31). Thomas de Gray and Lionel W. Rothschild were also accomplished amateur lepidopterists. I am extremely fortunate to have recently obtained my own copy (34), originally owned by the Faculty of Physicians and Surgeons, Glasgow, Scotland. My curiosity about its watermarks prompted this study.

Plate sets. Individual plates from *Insects of Georgia* were evidently offered for sale shortly after production of the book was discontinued. The only known surviving set of such plates was once owned by American lepidopterist Cyril F. dos Passos and is now deposited in the Thomas Rare Book Library, Wittenberg University, Springfield, Ohio. It is comprised of 73 bound plates, including one duplicate. According to a typed and handwritten note pasted onto a flyleaf, dos Passos purchased the set unbound in 1961 from London bookseller Wheldon & Wesley for the paltry sum of \$56.00 US. Wheldon & Wesley was undoubtedly responsible for the typed portion of this note, as it includes the UK spelling of “coloured.” Handwritten additions and corrections appear to have been added by dos Passos. The note describes the set as “An interesting collection as it represents a second issue, apparently unrecorded. Many of the plates are watermarked between 1820 and 1828.” This is the earliest known direct reference to later watermarks on plates of *Insects of Georgia*. It is astounding that comparable watermarks in copies of the book were never mentioned in the literature during the preceding 130 years.

This was the only incomplete set of plates known to Wilkinson (1981, 1982), but a similar set with 37 plates was sold at auction in 1980 (Heath 1981). A single plate from an unidentified source was also figured by Rogers-Price (1983). The Wittenberg set includes Plates 1–14, 16–22, 24–26, 31 (2 ea), 32, 33, 36–38, 40, 42, 44–49, 55, 56, 58, 60–76, 84–87, 89, 90, 94–96, 98, 100–102, and 104. The set sold in 1980 included Plates 1–12, 22, 25, 26, 32–34, 36, 40, 44–47, 49, 55, 60–62, 65, 76, 89, 94, and 101–103 (Heath 1981). Ten plates in the Wittenberg set (nos. 1, 6, 12, 18, 25, 32, 33, 45, 46, 61) bear an inscription across the foot of the sheet that reads, “Sold by R Martin. Book & Printseller. 47. Great Queen Strt: Lincolns Inn Fields” (Fig. 15). Seventeen plates in the auctioned set also possessed this inscription (Heath 1981). Most of the plates in the Wittenberg set, particularly those with Martin's inscriptions, were colored with imprecise hues and decidedly sloppy paint application (Figs. 16, 17). Although the “Sold by R.

Martin" inscriptions resemble engraved imprints, they are handwritten in ink and some still possess penciled guidelines. I recently located an 1819 landscape print and an 1828 map that bear the same "Sold by R. Martin" inscriptions (at the University of Portsmouth and a private printseller in London). Rogers-Price (1983) proposed that Martin was the English painter of landscapes, animals, and figurative subjects listed by Wood (1978). However, "Robson's London Directory" for the years 1825–1826 and 1830–1839 listed a book and print seller by the name of Robert Martin who operated primarily from 47 Great Queen Street, Lincoln's Inn Fields, Holborn, London. The individual listed by Wood (1978) was another Robert Martin (son?) who conducted business from a nearby address in Holborn. He was listed separately from the bookseller in 1825–1826 as a "lithographic printer" and as an "artist, engraver, lithographic, & letterpress & copper plate printer" in the London postal directory for 1841. The bookseller was no longer listed in 1841.

Rogers-Price (1983) supposed that Martin acquired the copper plates, engraved his name, and produced restrikes of the prints for individual sale. However, Martin's inscriptions are handwritten and the plates in the Wittenberg set share characteristics with those contained in later copies of the book. Twelve plates have watermarked dates of 1820, 1821, 1822, and 1828. The plates in the auctioned set were similarly dated 1822–1825 (Heath 1981). The watermarks of the Wittenberg set include "J Whatman/1821" "J Whatman/1822," and "J Whatman/Turkey Mill/1822." Although Wilkinson (1981) attributed all watermarks to Whatman, plates dated 1820 and 1828 are printed on paper with "S" watermarks. Restrikes would all possess engraved captions, but three of these plates lack captions. This evidence refutes the notion that Martin produced restrikes.

Like modern printsellers, Martin probably removed the majority of his prints from broken copies of the book. He also appears to have purchased residual stock of uncolored prints after the last copies of *Insects of Georgia* were assembled. These he colored himself, adding his "Sold by R. Martin" inscription to most of them. The latest watermarked date encountered during this study is 1828, associated with Plate 45 in the Wittenberg set. This plate is badly colored and possesses Martin's "Sold by" inscription, offering additional evidence that Martin obtained residual prints after the book was discontinued. Perhaps due to poor sales, or at the request of customers, Martin combined his remaining inventory into sets of assorted plates. Penciled numbers on many plates in the Wittenberg set may represent Martin's inventory tally.

The true identity of *Papilio bathyllus* J. E. Smith. Original drawings can be instrumental in determining the identity of taxa described and figured in early color plate books (Calhoun 2003, 2004, 2005). Despite their talent, it was difficult for engravers to precisely reproduce every aspect of the original drawings. Some loss of detail was inherent in this process. Moreover, colorists frequently exaggerated or masked pattern elements, further obscuring the identity of figured species and leading to confusion over the status of taxa originally described in these works. To appreciate the phenotypic characters of the species depicted in *Insects of Georgia*, it is important to consult the original drawings. While studying the entomological works of Jacob Hübner, Hemming (1937) also found that "the identity of a specimen figured may be readily resolved if the original drawing is available for study."

Plate 22 of *Insects of Georgia* portrays a dorsal male, dorsal female, and ventral female that Smith described as *Papilio bathyllus*, now recognized as *Thorybes bathyllus* (Fig. 18). The female figures on the plate possess offset rows of forewing subapical spots. The lowermost spot is distally removed, but is more distinct in some prints than others, depending on the quality of the paint application. In his treatment of *T. bathyllus*, Scudder (1888–1889) referred to rows of spots on the forewings as "three or four closely connected white spots, the lowermost a little smaller than the others and inclined to be removed further toward the tip." Bell (1923) considered these offset subapical spots, the lowest "slightly out of line toward the outer margin," to be a characteristic of his new species, *Thorybes confusis* Bell. Forbes (1960) described these spots on *T. confusis* as tending to "curve out and point up." Gatrell (2001) concluded that these offset spots are reliable in differentiating *T. confusis* from *T. bathyllus*, which consistently has aligned spots. The male holotype of *T. confusis* in the American Museum of Natural History, as well as five paratypes in the Carnegie Museum of Natural History (figured in Holland 1931, Plate L, figs. 1, 2) and the National Museum of Natural History (USNM), all exhibit offset rows of subapical spots. The female figures on Plate 22 also possess narrow forewing median spots, which is another characteristic of *T. confusis*. I consulted Abbot's original drawing to determine if these pattern elements were intentional or artifacts of the engraving process (Fig. 19). Abbot's original figures possess these features and appear to be most consistent with *T. confusis* (Fig. 20). *Thorybes confusis* is distributed across the southeastern United States and still occurs in eastern Georgia where Abbot presumably collected his specimens (Harris 1972).

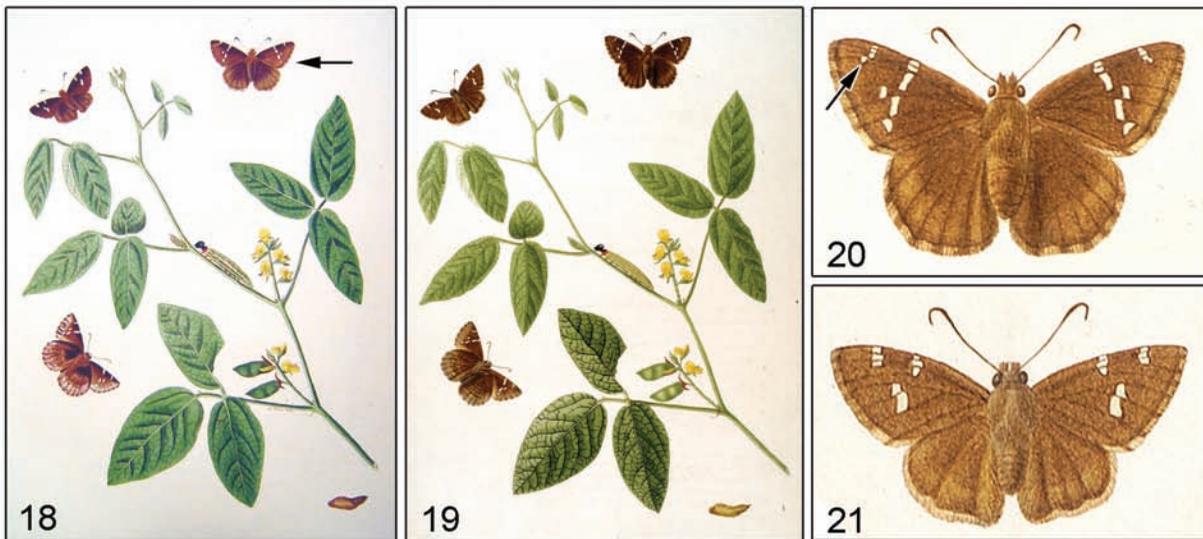
The figure of the dorsal female has position



FIGS 15-17. Plate details. 15, Inscription from R. Martin plate set°. 16, Ventral male *Danaus gilippus* (Cramer), Plate 7 from a copy of *Insects of Georgia*. 17, Poorly colored ventral male *D. gilippus*, Plate 7 from the R. Martin plate set°. (°Thomas Library, Wittenberg University).

precedence on both the original drawing and corresponding Plate 22 in *Insects of Georgia* (Figs. 18, 19). Accordingly, it can be argued that the name *Papilio bathyllus* applies to the species now recognized as *T. confusus*. No name-bearing type of *P. bathyllus* exists, but this name has been associated with actual specimens for 207 years, including 82 years after the description of *T. confusus*. The priority replacement of the name *T. confusus* by *P. bathyllus* would result in considerable confusion. To promote nomenclatural stability, I hereby designate Abbot's male specimen, best portrayed in his original drawing (Fig. 21), as the LECTOTYPE of *Papilio bathyllus* J. E. Smith. The forewing pattern of

the illustrated figure is somewhat conceptual, but the species is still readily identifiable and easily differentiated from males of *T. confusus*, as well as the third related species in Georgia, *Thorybes pylades* (Scudder). This figure was consulted by Smith for his original description and its etched version has been associated with the name *P. bathyllus* for over two centuries. The specimen that Abbot illustrated probably no longer exists. The type locality of *P. bathyllus* is restricted to Burke County, Georgia, where Abbot lived when he completed this drawing. The lectotype that Ferguson (1978) designated for *Phalaena leucophaea* is likewise better portrayed in Abbot's



FIGS. 18-21. *Thorybes* illustrations. 18, Plate 22 of *Papilio bathyllus* (arrow indicates dorsal female). 19, Original drawing for Plate 22°. 20, Original dorsal female of *P. bathyllus* (*T. confusus*)° (arrow indicates offset subapical spot). 21, Original dorsal male of *P. bathyllus*°, representing the lectotype. (°The John Work Garrett Library of the Johns Hopkins University).

original drawing, which was unknown to Ferguson. Published figures of these species in *Insects of Georgia* vary from print to print, offering less consistent renditions of Abbot's specimens.

DISCUSSION

Evidence confirms that complete “new” copies of *Insects of Georgia* were assembled for over three decades. Watermarks alone reveal that nearly 50 percent of the copies of *Insects of Georgia* examined during this study were assembled after 1797. Seven of the eight auction records that refer to watermarks also indicate reissues (Table 2). However, dated watermarks cannot be exclusively relied upon to determine issue status. Only four of the 13 copies with 1794 watermarks in Table 3 are thought to be first issues. Based on evidence accumulated during this study, the following is a reasonable account of the production of *Insects of Georgia*.

The first copies were assembled during the summer of 1797. Plates in these copies bear watermarks of 1794 or undated watermarks suggestive of earlier paper. The copper plates were most likely inked with a dabber (dauber), which restricted the ink to the central figures of insects and plants. As a result, the signatures that engraver John Harris etched at the foot of the copper plates did not usually appear on these prints. Many of these prints received handwritten names and numbers. Copies 3, 11, 12, and 14 (Table 3) contain only plates in this format and likely represent first issues. Copy 12 is the only one known to be deposited in Georgia that can be deemed a first issue.

Plates 77 and 78 were struck using the original versions of their copper plates, but the resulting prints were not used for early copies of the book. The moths on these copper plates were re-etched and the resulting new prints were used for initial issues. Captions were engraved on all the copper plates before February 1798, providing consistency and alleviating the need for calligraphers. Unused prints that lacked engraved captions were placed into storage. The presence of engraved captions required that greater portions of the copper plates had to be inked, thereby revealing more of the signatures that Harris etched at the foot of the copper plates. The added cost of employing calligraphers and letter engravers, as well as striking all new plates, probably contributed to the financial loss lamented by publisher James Edwards.

The foreign subject matter of *Insects of Georgia* was not as popular among British and European patrons as Smith's botanical works. As a result, production of the book may have been suspended after 1798. This is suggested by the disposal of the bound original drawings

by publisher James Edwards in June 1799. A large amount of letterpress and printed plates remained unused. Probably between 1801 and 1804 a set of prints were stuck on vellum, colored by engraver John Harris, and bound with letterpress into a copy of *Insects of Georgia*. These stunning volumes were possibly created as a device to generate new orders for the book. Alternatively, they were produced as a retirement gift for James Edwards in 1804.

It may have been after the retirement of Edwards that residual letterpress and prints were brought out of storage and additional copies of the book were assembled. Prints with engraved captions were preferred for these copies, but too few remained. To complete these new copies and minimize costs, a few earlier prints without engraved captions were also used. Most of these early prints possessed handwritten captions. Volumes consisting of mixed plates from early impressions were probably produced on an irregular basis for up to twenty years under the pretext of having been assembled in 1797. By about 1820, early prints with engraved captions were nearly depleted, so new prints were struck on paper dated 1817. More of the early prints without engraved captions were used to complete these new copies. This resulted in a limited issue of books that included plates dated only 1794 and 1817.

Additional copies of the book were assembled ca. 1825–1830. An even greater quantity of early prints without engraved captions was combined with new prints to produce these volumes. Later copies of the book therefore contain an assortment of prints, effectively representing anthologies of preceding impressions. It is unknown if colorists utilized pattern plates to maintain consistency from issue to issue, or if they simply consulted earlier colored prints. Many of the earlier prints may also have been colored just prior to use for later reissues. A large number of copies were assembled during this period, possibly in response to the growing popularity of entomological themes. Ornithologist John J. Audubon was living in London around this time and observed, “Insects, reptiles and fishes are now the rage, and these fly, swim or crawl on pages innumerable in every bookseller's window” (Hart-Davis 2004). The additional steps of printing and coloring plates tripled production costs (Swainson 1840). The use of residual material probably allowed reissues of *Insects of Georgia* to be offered at a lower price. Bohn (1841) listed a probable reissue copy for only £7, 7s.

The letterpress was probably consumed around 1830. Unused plates were sold to Robert Martin and possibly other printsellers who sought to take advantage of the

market interest in zoological prints. Referring to prints or complete copies of the book still available in London during the 1830s, Swainson (1840) observed, "There are many inferior copies on sale among the booksellers, which are offered at a low price, but the original coloured impressions are seldom met with."

Publisher John White retired in 1816, thus it was most likely Cadell & Davies who gained primary control over production of the book after the retirement of J. Edwards in 1804. After the death of Davies, Cadell continued doing business until his own death in 1836. Unfortunately, the fate of the copper plates remains a mystery; they may have been discarded after the death of Cadell. It is unknown how many copies of *Insects of Georgia* were ultimately assembled. There are undoubtedly additional surviving copies of *Insects of Georgia*, while many others have been lost, broken, or destroyed. It is reasonable to conclude that no more than 250 sets were ever produced. Perhaps less than 50 were offered in 1797.

To imply greater value, some modern booksellers have listed copies of *Insects of Georgia* as "first editions". Despite differences on the plates, no edition statement ever appeared and the letterpress was unaltered throughout the life of the book. Five "Errata" on page 214 remained uncorrected. Early publishers routinely offered reissues of books without any indication that they were produced after the initial publication date. All copies of *Insects of Georgia* should be considered as part of the same single edition.

Insects of Georgia remains a revered masterpiece. The accolades of a contemporary reviewer still resonate after two centuries: "We cannot, however, forbear congratulating the dilettante and the student on the pleasure and information they are about to receive from a sedulous perusal and judicious contemplation of such an assemblage of natural curiosities; and we return our thanks to the publisher, equally for the spirit with which he rescued so valuable a collection from obscurity, and the perseverance and taste with which he superintended the execution of the whole" (Anonymous 1798).

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