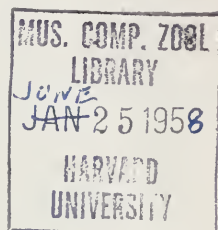


THE BUTTERFLIES OF MISSISSIPPI

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1. INTRODUCTION

We propose to summarize the data on the butterflies of Mississippi. Previous work, supplemented by our studies, begun in 1946, has yielded records from 189 localities representing all of Mississippi's 82 counties. Records are given of the occurrence of 122 species of butterflies, 45 of which were not included in either of the two previously published lists. We also present our reasons for believing that 41 other species are of probable or possible occurrence in Mississippi. We believe that approximately 160 species will be found and we hope that additional collecting will increase the number that are known. We have taken specimens of 109 of the 122 species listed as known. Flight-period information is given for 121 species in Mississippi. Specimens of ten species have been taken in all months of the year. Of ten species, only one Mississippi specimen is known; and of one species (*Phoebis philea*), no specimen from Mississippi is known.

We believe that one principal value of this summary to lepidopterists not directly concerned with Mississippi butterflies, will be in clarifying the significance of some of the numerous vague statements found in the literature regarding the range of the species listed here. Particularly unsatisfactory, for the purpose of deciding whether or not it was the author's intention to indicate that a given species did or did not occur in Mississippi, are such statements of range as: "Florida, Texas"; "Florida and Texas", "Florida to Texas"; "Florida, Gulf States, Texas"; "Gulf States"; "Gulf Coast"; or "Gulf Strip." We are cognizant of the virtual absence from the data here summarized of information on food plant preferences or on life histories. We hope that future work by us and others will help to remedy these deficiencies. No photographs are included in this report. Readers who wish to consult illustrations for aid in identification of specimens are referred to *A Field Guide to the Butterflies* (Klots, 1951). Taxonomists working on revisionary studies will find typical examples of Mississippi butterflies from our collection, in a number of other collections or they may write to us. We will be happy to lend material for such studies. In preparing this report we have tried to follow the advice

and suggestions given by Clench (1949) in his discussion of regional lists.

II. LITERATURE AND COLLECTIONS

The scientific study of the butterflies of Mississippi was begun by Howard Evarts Weed in 1891, continued by Frank Morton Jones in 1910 and 1921, by Ross E. Hutchins from 1929 to 1933, by Harold I. O'Byrne in 1940, and by us since 1946. Two lists have been published: Weed (1894) listed 53 species from Oktibbeha County; Hutchins (1933) listed 73 species based principally on collecting in the vicinity of Mississippi State College, Oktibbeha County, and on specimens in the State College collection. The results of the work by Jones and O'Byrne have not been published. The greater part of the Jones collection is now in the Peabody Museum of Natural History at Yale University. The O'Byrne collection is at the University of Missouri. Dr. Jones kindly furnished us with a detailed summary of his results, and data on 14 Mississippi specimens from the Jones collection were kindly provided by Prof. C. L. Remington. Data on Mississippi specimens in the O'Byrne collection were compiled by one of us (K.M.) in October 1953. Data on Mississippi specimens in the collection of the American Museum of Natural History were compiled in April 1956 and kindly furnished to us by Mr. Kilian Roever; additional data were supplied by Mr. Cyril F. dos Passos. Martin and Truxal (1955) reported Mississippi specimens of two species in the collection of the Los Angeles County Museum; Mr. Martin kindly supplied us with additional data on these. We examined the collection at Mississippi State College in March 1953, and one of us (B.M.) examined the collection at Purdue University, Lafayette, Ind. in October 1953.

No species, subspecies, or form of butterfly has been described from specimens taken in Mississippi. The state of Mississippi is not mentioned in either edition of *The Butterfly Book* (Holland, 1898, 1931), and but three times in *A Field Guide to the Butterflies* (Klots, 1951). Williams (1938) and Williams, et al (1942) mentioned observations of fall movement of *Phoebis sennae eubule* at Biloxi by R. S. Smith and at Bay St. Louis by C. Lyle, and of *Danaus plexippus* at Bay St. Louis by Lyle. Urquhart (1955) mentioned observations of

fall movement of *D. plexippus* at Minter City by Miss Carrie Avent. Jones (1943) reported observations of migration of *P. sennae eubule* near Oxford. Forket (1900) reported observations at Ocean Springs. Preliminary reports of some of our work have been published (Mather, 1952a, 1952b, 1953, 1954a, 1954b, 1955a, 1955b, 1956b).

III. AREA STUDIED

A. Geography

The state of Mississippi has an area of about 47,000 sq. mi., an extreme width of about 180 mi., an extreme length of about 330 mi., and a maximum elevation of 806 ft. above sea level. It is bounded by Tennessee, Alabama, Louisiana, Arkansas, and the Gulf of Mexico.

B. Physiography

Mississippi lies entirely in the Gulf Coastal Plain province, extending to the inner boundary of the province in its north-eastern corner where the boundary of the state and the province is the Tennessee River (Fenneman, 1938). Portions of two major divisions are included: the east Gulf Coastal Plain and the Mississippi Alluvial Plain. The state has been subdivided into regions based on geological formations, topography, soils, forest types, land use, and similar criteria. Pre-Cretaceous, Paleozoic, rocks reach the surface only in small areas in the tributaries of the Tennessee River in the extreme northeastern corner of the state. The soils belong to four major groups (U.S. Dept. of Agriculture, 1938). We believe that differentiation of the following five regions is sufficient for our purposes; the approximate boundaries of each are shown on the locality maps (figs. 2-6).

Delta.—The major part of the alluvial plain of the Mississippi River included in the state is the Yazoo River basin and is known as "The Delta." This is an area of lowlands extending south along the Mississippi River from the Tennessee line for about 200 mi., reaching a maximum width of 60 mi. It has a rich alluvial soil and is characterized by hardwoods.

Tennessee River Hills.—This region includes the highest elevation in the state and constitutes a rather narrow belt along the northern one third of the eastern boundary.

Black Prairie.—The black prairie or black belt, is a narrow zone bordering the Ten-

nessee River Hills, underlain by chalk. The soils are classified as Rendzina.

Coastal Meadows.—This is a narrow belt, 5 to 15 mi. wide, bordering the Gulf of Mexico, rising 20 to 30 ft. above sea level, characterized by poor drainage and soils of the Weissenboden-, Ground- Water Podzol, Half-Bog Group.

Central Hills, Plateau, and Prairie.—This subdivision includes the major part of the state. It is underlain by a sequence of sedimentary formations and, together with the Tennessee River Hills, is characterized by soils of the red-yellow podzol group. The hills bordering the delta are capped with brown loam or loess. The hills north of the coastal meadows are the "piney woods" or southern pine hills area.

C. Life Zones

The map given in Klots (1951) indicated that Mississippi is entirely in the Lower Austral Life zone. Lowe (1921) wrote "All of Mississippi is embraced within the Austroriparian Area of the Lower Austral Zone, though a number of species, which probably belong in the Carolinian Area, reach this state in its extreme northeast corner." Lambremont (1954) stated that Louisiana was entirely within the Austroriparian life zone; the northern portion in the Carolinian area, and the southern portion in a semi-tropical region called the Gulf Strip. Prof. R. L. Chermock called our attention to the paper by Rehn and Hebard (1916) in which the Sabalian life zone was proposed for the area along the Gulf and stated that his studies in Alabama indicated that this zone includes the southern tier of counties and extends some distance up the rivers. He also noted that recent studies of the biology of Tishomingo County in extreme northeast Mississippi and of adjacent areas in Alabama indicated an upper Austral outlier in that region. Prof. Klots wrote us that he believes many species get deep down into Mississippi that are not merely Upper Austral but Transition; that while Mississippi is essentially all Lower Austral, this does not mean that all species found there are Lower Austral. It contains some tropical species; that is, species that certainly originated in truly tropical regions and have extended their ranges so that they occur naturally in the Lower Austral life zone, not as strays.



Figure 1. Division of Mississippi into regions.

It also contains similar Upper Austral and Transition zone elements.

D. Climate

The average temperature is 65°F, the average frost-free season is 200 days in the north and 250 days in the south, and the average rainfall is 50 inches in the north and 60 inches in the south. The average rainfall by months for the period 1888-1955 varied from 2.5 inches for October to 5.9 inches for March. The records of average monthly temperature and total precipitation for Jackson, Hinds Co., for the 10-year period, 1946-1955 were examined. Only once, January 1948, was there a month with an average temperature below 40°F, and there were three winters, 1948-49, 1949-50, and 1951-52, during which no month had an average temperature below 50°F. The annual rainfall ranged from 32 inches in 1952 to 61 inches in 1946. No precipitation at all was recorded in three of the 120 months: November 1949, May 1951, and October 1952. More than 15 inches was recorded in November 1948, and more than 12 inches in January 1947 and July 1955.

IV. LOCALITIES

The 189 Mississippi localities from which we have records are circled on the five regional maps (figs. 2-6). The division of the state into these five regions (fig. 1) is arbitrary and only for convenience of indicating localities. The counties in each region are: (1) *Southeast*: Covington, Forrest, George, Greene, Hancock, Harrison, Jackson, Jefferson Davis, Jones, Lamar, Marion, Pearl River, Perry, Stone, and Wayne Counties. (2) *Southwest*: Adams, Amite, Claiborne, Copiah, Franklin, Hinds, Issaquena, Jefferson, Lawrence, Lincoln, Madison, Pike, Rankin, Sharkey, Simpson, Walthall, Warren, Wilkinson, and Yazoo Counties. (3) *East Central*: Attala, Clarke, Jasper, Kemper, Lauderdale, Leake, Neshoba, Newton, Noxubee, Scott, Smith, and Winston Counties. (4) *Northwest ("Delta")*: Bolivar, Carroll, Coahoma, De Soto, Grenada, Holmes, Humphreys, Leflore, Panola, Quitman, Sunflower, Tallahatchie, Tate, Tunica, Washington, and Yalobusha Counties. (5) *Northeast*: Alcorn, Benton, Calhoun, Chickasaw, Chocataw, Clay, Itawamba, Lafayette, Lee, Lowndes, Marshall, Monroe, Montgomery, Oktib-

beha, Pontotoc, Prentiss, Tippah, Tishomingo, Union, and Webster Counties.

The boundaries of the five natural regions defined previously in this report are indicated on the locality maps. (1) The Delta occupies the greater portion of the north-west region and extends into the southwest section. All or a major part of twelve counties is included in this region. (2) The Tennessee River Hills lies in the northeast region and includes all of Tishomingo County, most of Itawamba County, and the eastern parts of Alcorn, Prentiss, Monroe, and Lowndes Counties. (3) The Black Prairie occupies a belt to the west of the Tennessee River Hills, is shown on the maps of the northeast and east central regions. (4) The Coastal Meadows, bordering the Gulf Coast, is shown on the map of the southeast region, and occupies the southern parts of Hancock, Harrison, and Jackson Counties. (5) The remainder of the state comprises the central hills, plateau, and prairie.

V. COMPARISON WITH OTHER REGIONS

Louisiana.—The recently published Louisiana list (Lambremont, 1954) includes 137 names, eight of which are, according to our views, duplications. In seven of these cases two subspecies are listed: *C. p. pegala* and *C. p. alope*, *D. p. plexippus* and *D. p. melanippe*, *A. c. celtis* and *A. c. alicia*, *A. c. clyton* and *A. c. flora*, *S. o. ontario* and *S. o. autolycus*, *P. t. troilus* and *P. t. ilioneus*, and *P. s. sennae* and *P. s. eubule*: in an additional case material that we regard as conspecific is assigned to two species: *A. dion* and *A. alabamiae*. Of the 129 remaining distinct species mentioned, 93 are listed as known, 36 as probable. All of these are among the species discussed in this report. The 35 species included here that were not mentioned by Lambremont include 14 that are known from Mississippi: *S. diana*, *P. comma*, *I. augustinus*, *I. henrici*, *L. thoë*, *A. maerula*, *A. cellus*, *P. syrictus*, *P. zabulon*, *A. arpa*, *A. palatka*, *A. loammii*, *A. begon*, and *A. carolina*. Nine species listed as known from Louisiana have not yet been recorded from Mississippi: *D. julia*, *S. cybele*, *I. irus*, *B. polydamas*, *P. agarithe*, *C. nessus*, *H. leonardus*, *P. viator*, and *A. dukesi*. Of the 36 species listed as probable for Louisiana, 25 are reported here as known from Mississippi. Two additions may be made to the list

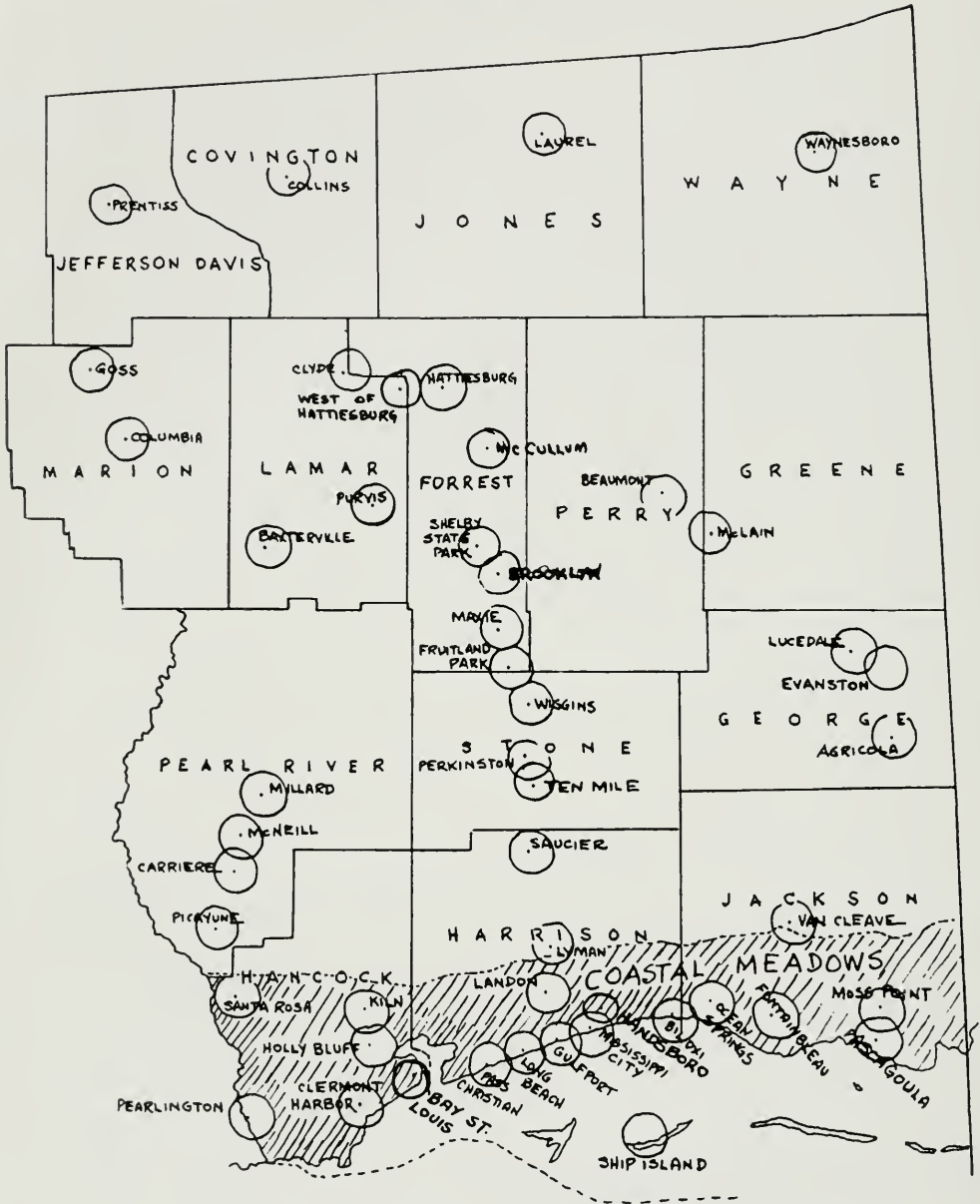


Figure 2. Localities in southeast Mississippi.

of species known from Louisiana: *L. creola* and *S. diana*. The basis for these additions is given in the annotated list.

Virginia and Georgia.—A total of 143 species were recorded from Virginia by the Clarks (1951). Harris (1950) recorded 144 species from Georgia. Only three species listed as known from both Virginia and Georgia are not known or expected from

Mississippi: *Polygona faunus*, *Speyeria aphrodite*, and *Poanes aaroni*. Three others are listed as known from Georgia but not listed as probable or possible for Mississippi: *Strymon calanus*, *Polites baracoa*, and *Problemata bulenta*.

Kentucky.—Of the 67 species listed as recorded or expected for Jefferson County, Kentucky by Merritt (1948), all but two

(*Speyeria aphrodite* and *Nymphalis j-album*) are listed here.

Texas.—Of the 62 species listed as known from the vicinity of Waco, Texas by Gooch and Strecker (1924), all but three (*Melitaea barrisi*, *Chlosyne lacinia* and *Mestra anymone*) are listed here. Notations from Freeman's study (1951c) of the Hesperioidea of Texas are given in the annotated list.

Tennessee.—Of the 72 species listed as known from the Nashville region by Osborn (1895) all but one (*Speyeria aphrodite*) are listed here. Considerable information from the unpublished studies of Mr. Kilian Roever of Jackson, Tennessee is included in the annotated list with his kind permission.

Alabama.—There is no published list of the butterflies of Alabama. A considerable number of records kindly provided by Prof. Ralph L. Chermock have been mentioned, with his permission, in the annotated list.

Arkansas.—We know of no published general list of the butterflies of Arkansas. Comment on certain species reported from Arkansas by Freeman (1945, 1951a) is included in the annotated list.

Southeastern.—Of the 104 species listed by Richards (1931), all but three (*Speyeria aphrodite*, *Polygonia faunus*, and *Strymon calanus*) are included in our annotated list.

VI. CHECK LIST

A. Species Known to Occur in Mississippi

SUPERFAMILY PAPILIONOIDEA

FAMILY SATYRIDAE

1. *Lethe portlandia portlandia* (Fabricius)
- *2. *Lethe creola* (Skinner)¹
3. *Euptychia cymela cymela* (Cramer)
4. *Euptychia hermes sosybia* (Fabricius)
- *5. *Euptychia areolata areolata* (J. E. Smith)
6. *Euptychia gemma gemma* (Huebner)
7. *Cercyonis pegala pegala* (Fabricius)

FAMILY DANAIDAE

- *8. *Danaus gilippus berenice* (Cramer)
9. *Danaus plexippus plexippus* (Linnaeus)

FAMILY HELICONIIDAE

- *10. *Heliconius charitonius tucgeri* Comstock and Brown
11. *Agraulis vanillae nigrrior* Michener

FAMILY NYMPHALIDAE

12. *Euptoieta claudia* (Cramer)
- *13. *Speyeria diana* (Cramer)
- *14. *Melitaea gorgone gorgone* (Huebner)
- *15. *Melitaea nycteis nycteis* Doubleday
16. *Phyciodes phaon* Edwards
17. *Phyciodes tharos tharos* (Drury)
- *18. *Phyciodes texana seminole* (Skinner)
19. *Polygonia interrogationis* (Fabricius)
20. *Polygonia comma* (Harris)
21. *Nymphalis antiopa* (Linnaeus)
22. *Vanessa atalanta* (Linnaeus)
23. *Vanessa cardui* (Linnaeus)
24. *Vanessa virginiensis* (Drury)
25. *Precis lavinia coenia* (Huebner)
26. *Limenitis arthemis astyanax* (Fabricius)
27. *Limenitis archippus watsoni* (dos Passos)
28. *Anaea andria* (Scudder)
29. *Asterocampa clyton clyton* (Boisduval and LeConte)
30. *Asterocampa celtis alicia* (Edwards)

FAMILY LIBYTHEIDAE

31. *Libytheana bachmanii bachmanii* (Kirtland)

FAMILY RIODINIDAE

32. *Lepbelisca virginiensis* (Guérin)

FAMILY LYCAENIDAE

33. *Atlides halesus halesus* (Cramer)
- *34. *Strymon m-album* (Boisduval and LeConte)
35. *Strymon cecrops* (Fabricius)
36. *Strymon melinus melinus* (Huebner)
- *37. *Strymon favonius* (J. E. Smith)
- *38. *Strymon ontario ontario* (Edwards)
39. *Strymon falacer* (Godart)
40. *Strymon liparops strigosus* (Harris)
41. *Mitoura gryneus gryneus* (Huebner)
- *42. *Incisalia augustinus croesioides* Scudder
43. *Incisalia henrici turneri* Clench
- *44. *Incisalia nippon nippon* (Huebner)
- *45. *Feniseca tarquinius tarquinius* (Fabricius)
- *46. *Lycaena thoë* (Guérin)
- *47. *Hemiargus ceraunus antibubastus* Huebner
- *48. *Echinargus isola alce* (Edwards)
49. *Everes comyntas comyntas* (Godart)

¹ Species marked by an asterisk were not included in either of the previously published lists of Mississippi butterflies (Weed, 1894; Hutchins, 1933).

50. *Lycaenopsis argiolus pseudargiolus* (Boisduval and LeConte)

FAMILY PAPILIONIDAE

51. *Papilio polyxenes asterius* (Stoll)
 52. *Papilio cressphontes cressphontes* (Cramer)
 53. *Papilio glaucus glaucus* (Linnaeus)
 54. *Papilio troilus ilioneus* J. E. Smith
 55. *Papilio palamedes palamedes* (Drury)
 56. *Graphium marcellus marcellus* (Cramer)
 57. *Battus philenor* (Linnaeus)

FAMILY PIERIDAE

58. *Anthocaris genutia* (Fabricius)
 59. *Colias eurytheme* Boisduval
 60. *Colias philodice* Godart
 61. *Zerene cesonia* (Stoll)
 *62. *Anteos maerula lacordairei* (Boisduval)
 63. *Phoebis sennae eubule* (Linnaeus)
 64. *Phoebis philea* (Linnaeus)
 65. *Eurema daira daira* (Latreille)
 *66. *Eurema mexicana* (Boisduval)
 67. *Eurema nicippe* (Cramer)
 68. *Eurema lisa lisa* (Boisduval and LeConte)
 69. *Nathalis iole* (Boisduval)
 70. *Pieris rapae* (Linnaeus)
 71. *Pieris protodice protodice* (Boisduval and LeConte)
 72. *Ascia monuste phileta* (Fabricius)

SUPERFAMILY HESPERIOIDEA

FAMILY HESPERIIDAE

73. *Epargyreus clarus clarus* (Cramer)
 74. *Urbanus proteus* (Linnaeus)
 75. *Achalarus lyciades* (Geyer)
 *76. *Autocthon cellus* (Boisduval and LeConte)
 77. *Thorybes bathyllus* (J. E. Smith)
 78. *Thorybes pylades* (Scudder)
 *79. *Thorbyes confusus* Bell
 80. *Pyrgus communis communis* (Grote)
 *81. *Pyrgus syrichtus* (Fabricius)
 82. *Pholisora catullus* (Fabricius)
 *83. *Pholisora hayhurstii* (Edwards)
 84. *Erynnis brizo brizo* (Boisduval and LeConte)
 85. *Erynnis martialis* (Scudder)
 86. *Erynnis horatius* (Scudder and Burgess)
 87. *Erynnis juvenalis* (Fabricius)
 *88. *Erynnis baptisiae* (Forbes)
 *89. *Erynnis zarucco* (Lucas)
 90. *Ancyloxypha numitor* (Fabricius)

- *91. *Copaodes minima* (Edwards)
 *92. *Hesperia metea metea* Scudder
 *93. *Hesperia attalus* (Edwards)
 94. *Hylephila phyleus* (Drury)
 95. *Atalopedes campestris* (Boisduval)
 *96. *Polites verna sequoyah* H. A. Freeman
 97. *Polites manataaqua* (Scudder)
 98. *Polites themistocles* (Latreille)
 99. *Polites vibex vibex* (Geyer)
 100. *Wallengrenia otho otho* (J. E. Smith)
 *101. *Poanes zabulon* (Boisduval and LeConte)
 *102. *Poanes yehl* (Skinner)
 *103. *Atrytone arogos arogos* (Boisduval and LeConte)
 *104. *Atrytone arpa* (Boisduval and LeConte)
 *105. *Atrytone dion alabamiae* (Lindsey)
 *106. *Atrytone palatka* (Edwards)
 *107. *Atrytone ruricola metacomet* (Harris)
 *108. *Atrytonopsis loammi* (Whitney)
 *109. *Atrytonopsis bianna* (Scudder)
 110. *Oligoria maculata* (Edwards)
 111. *Lerema accius* (J. E. Smith)
 *112. *Amblyscirtes vialis* (Edwards)
 *113. *Amblyscirtes hegou* (Scudder)
 *114. *Amblyscirtes carolina* (Skinner)
 *115. *Amblyscirtes textor* (Huebner)
 *116. *Amblyscirtes alternata* (Grote and Robinson)
 *117. *Amblyscirtes belli* H. A. Freeman
 118. *Lerodea l'herminieri* (Latreille)
 119. *Lerodea eufala* (Edwards)
 120. *Calpodus ethlius* (Stoll)
 *121. *Panoquina panoquin* (Scudder)
 122. *Panoquina ocola* (Edwards)

B. Species of Probable or Possible Occurrence in Mississippi

SUPERFAMILY PAPILIONOIDEA

FAMILY SATYRIDAE

123. *Lethe eurydice appalachia*
 R. L. Chermock

FAMILY HELICONIIDAE

124. *Dryas julia delila* (Fabricius)

FAMILY NYMPHALIDAE

125. *Speyeria idalia* (Drury)
 126. *Speyeria cybele cybele* (Fabricius)
 127. *Euphydryas phaeton phaeton* (Drury)

FAMILY LYCAENIDAE

128. *Strymon titus mopsus* (Huebner)
 129. *Strymon edwardsii* (Grote and Robinson)
 130. *Strymon kingi* Klotz and Clench

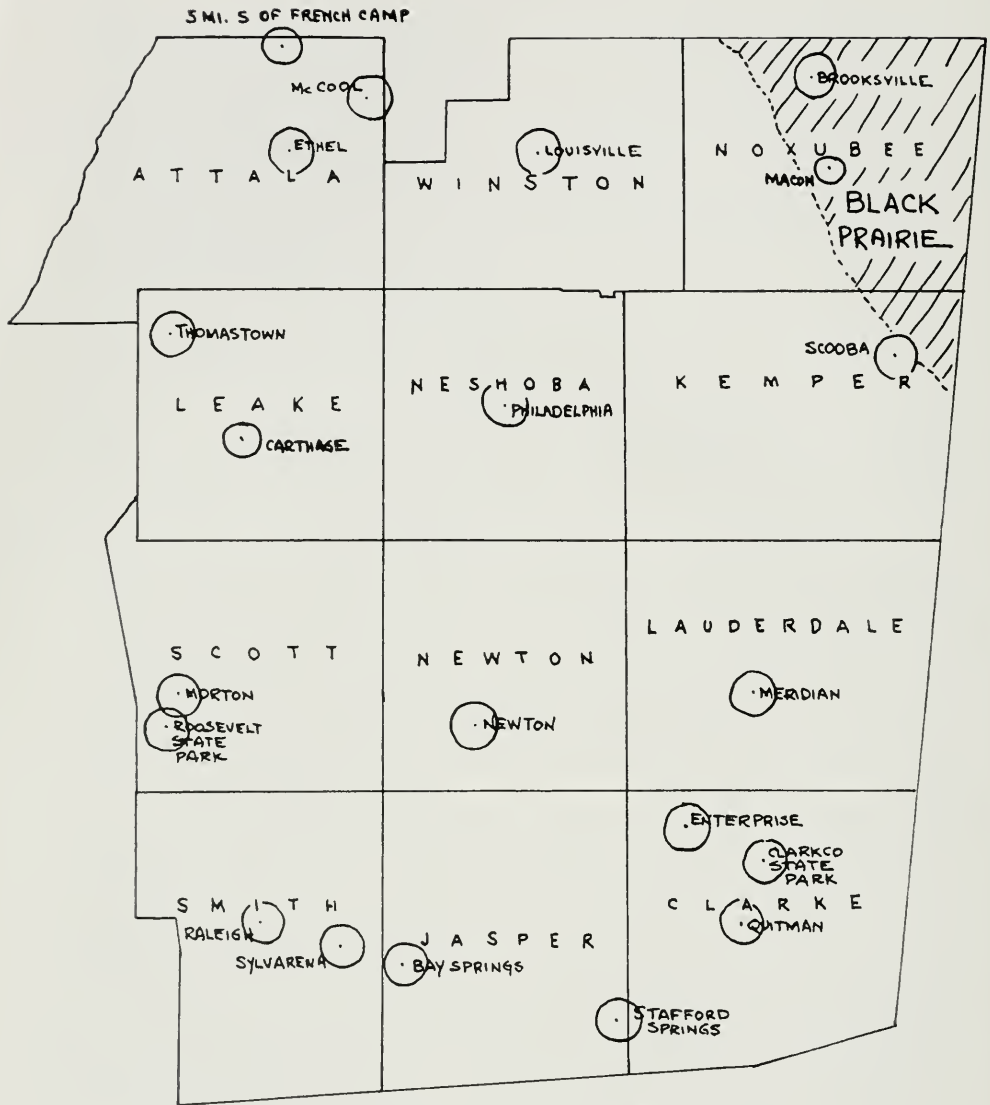


Figure 4. Localities in east central Mississippi.

131. *Strymon columella modesta* (Maynard)
132. *Mitoura besseli* Rawson and Ziegler
133. *Incisalia irus irus* (Godart)
134. *Lycaena phlaeas americana* Harris
135. *Leptotes cassius theonus* (Lucas)
136. *Brephidium pseudofea* (Morrison)
137. *Glaucopsyche lygdamus lygdamus* (Doubleday)

FAMILY PAPILIONIDAE

138. *Battus polydamas lucayus* (Rothschild and Jordan)

FAMILY PIERIDAE

139. *Anteos clorinde nivifera* (Fruhstorfer)
140. *Phoebis agarithe maxima* (Neumoegen)
141. *Pieris virginiensis* Edwards

SUPERFAMILY HESPERIOIDEA

FAMILY HESPERIIDAE

142. *Celotes nessus* (Edwards)
143. *Erynnis icelus* (Scudder and Burgess)
144. *Erynnis persius* (Scudder)
145. *Erynnis lucilius* (Scudder and Burgess)

146. *Erynnis funeralis* (Scudder and Burgess)
147. *Copaeodes aurantiaca* (Hewitson)
148. *Hesperia leonardus stallingsi*
H. A. Freeman
149. *Hesperia sassacus sassacus* Harris
150. *Hesperia meskei* (Edwards)
151. *Polites peckius* (Kirby)
152. *Poanes viator* (Edwards)
153. *Poanes hobomok hobomok* (Harris)
154. *Problemata byssus* (Edwards)
155. *Atrytone logan logan* (Edwards)
156. *Atrytone berryi* Bell
157. *Atrytone dukesi* Lindsey
158. *Atrytone bimacula* (Grote and Robinson)
159. *Amblyscirtes linda* H. A. Freeman
160. *Lerodea neamatla* Skinner and Williams

FAMILY MEGATHYMIDAE

161. *Megathymus yuccae yuccae*
(Boisduval and LeConte)
162. *Megathymus cofaqui* (Strecker)
163. *Megathymus harrisi* H. A. Freeman

VII. ANNOTATED LIST OF THE BUTTERFLIES OF MISSISSIPPI

A total of 163 species are discussed; part A lists the 122 that are known to occur; part B the 41 that we regard as probable or possible. The arrangement and, in general, the nomenclature follow that of the most recent published check list applicable to this region (Klots, 1951: 308-328). In some cases we have had difficulty in making an unequivocal determination as to what named population the Mississippi representatives of a given species should be assigned; such cases are discussed. There may be cases in which the Mississippi representatives of a given species represent more than one population; if so, we do not believe that we as yet have adequate data to support such a conclusion. "No two subspecies are permanent residents in the same locality" (Remington, 1951). We therefore do not assign to different subspecies, individual specimens, or groups of specimens apparently possessing the diagnostic characteristics of these different subspecies when the indications are that the specimens come from a single resident population in the same locality.

A published request (Mather, 1950b) for information on specimens, records, or references produced no response. Information not credited to others was obtained by us;

information credited to others for which no publication reference is given, was obtained orally or by letter.

A. Species Known to Occur

SUPERFAMILY PAPILIONOIDEA

FAMILY SATYRIDAE

1. *Lethe portlandia portlandia* (Fabricius). Fifty-eight specimens are known from localities in four counties. One female taken at Vicksburg, Warren Co., by George Dörner in September 1908, is in the United States National Museum and was mentioned by Clark (1936a: 254). Brown (1949) indicated that it was known from one county in Mississippi. A series of 22 was examined in 1954 by Mr. William D. Field at the USNM. Of the 17 males, eight showed some transitional tendencies toward *L. portlandia anthedon* A. H. Clark, nine did not. The five females showed a yellowish suffusion within the ocelli below that is also shown by the USNM specimen from Vicksburg and by another USNM specimen from Mobile, Ala. *L. p. portlandia* was found by Mr. Field to have the antennal club above and below orange, while *L. p. anthedon* has this club behind the tip completely ringed with black. In the USNM series there is but a single exception to this in 102 specimens of *L. p. portlandia*, and but two in 124 specimens of *L. p. anthedon*. Mr. C. F. dos Passos wrote that this character seems to hold in his series. One Mississippi specimen, a male from Yazoo City, has this *anthedon* character. Prof. Chermock expressed the belief that *L. p. anthedon* might well be expected in the northeast corner of Mississippi. Specimens have been taken from 6 April to 5 November, except in May. The best localities we have found are along the Pearl River in Hinds and Madison Counties and near the Big Black River in northwestern Hinds County where giant cane, *Arundinaria gigantea*, is found. Specific localities and dates are: *Hinds Co.*—Brownsville: 19 July 1953, 25 July 1953 (4), 1 June 1954, 6 April 1957 (3), 8 June 1957 (M. & E. Roshore), 4 July 1957 (M. & E. Roshore), 24 August 1957, 22 September 1957 (M. & E. Roshore), 20 October 1957 (2) (1 M. & E. Roshore), 3 November 1957 (4) (M. & E. Roshore); *Clinton*: 2 July 1947, 16 August 1953, 23 August 1953 (3); *Jackson* (waterworks): 5 November 1955 (3). *Madison Co.*—

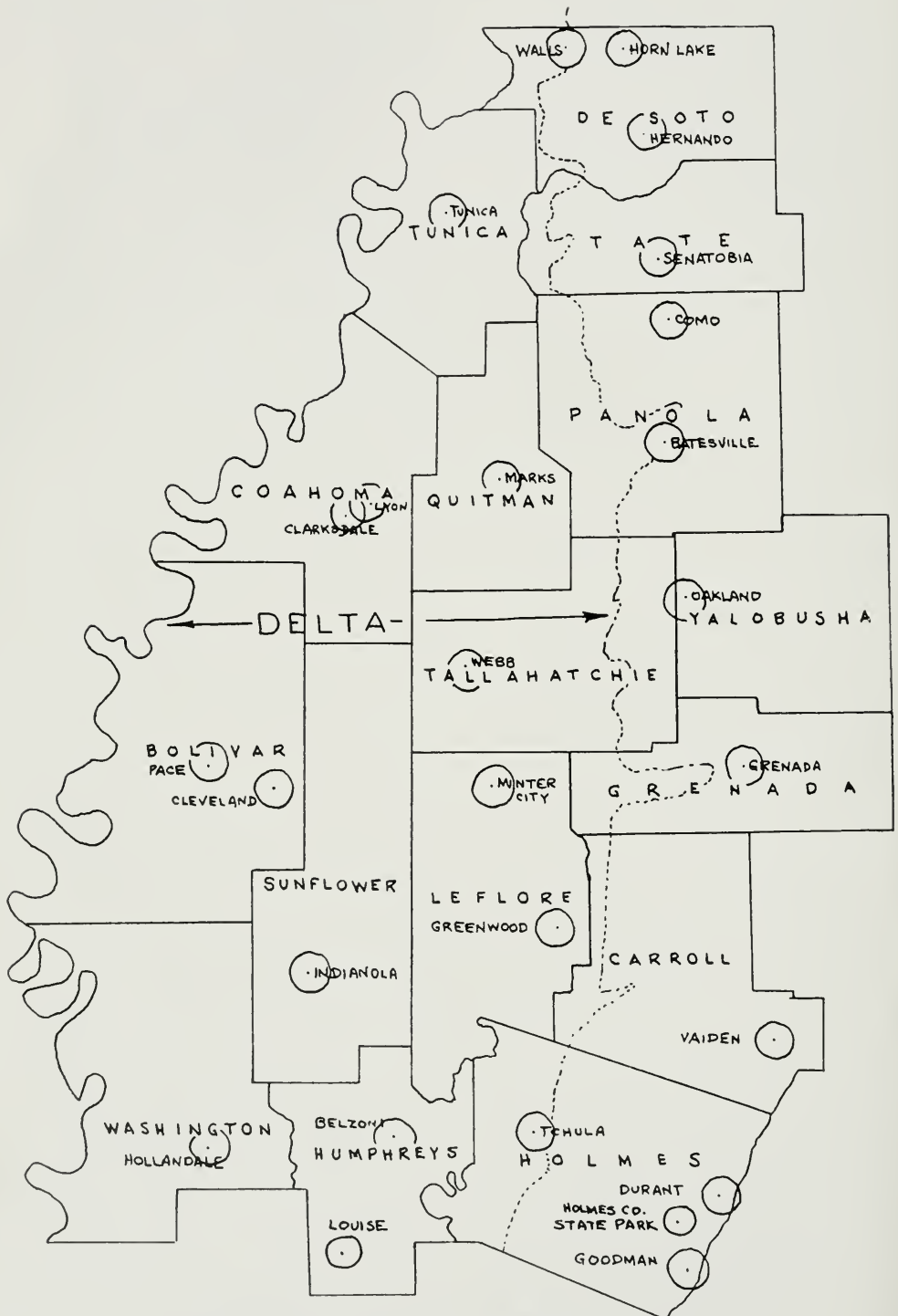


Figure 5. Localities in northwest Mississippi ("Delta")

Natchez Trace Cypress Swamp: 31 August 1952, 26 April 1953 (4), 29 August 1953 (4), 17 October 1953, 9 April 1954 (2), 6 June 1954, 6 September 1956, 7 September 1957 (14); Pearl River near Goshen Springs: 17 October 1953. *Warren Co.*—Vicksburg: September 1908 (George Dornier). *Yazoo Co.*—Yazoo City: 27 April 1951.

2. *Lethe creola* (Skinner). Nine specimens are known: *Hinds Co.*—Clinton: ♂♂: 30 July 1950, 8 July 1956, ♀: 11 September 1949; Brownsville: ♂: 17 July 1956 (John L. Daniel), ♀: 19 July 1953. *Madison Co.*—Natchez Trace Cypress Swamp: ♂♂: 31 August 1952 (2), 26 April 1953, 7 September 1957. Five of these were examined by Mr. Field and compared with the series in the U.S. National Museum. They agree with that series and with the original description (Skinner, 1897) based on specimens from Opelousas, La. Mr. A. H. Clark wrote to us on 10 December 1953: "In Skinner's original description of *Debis creola* the female is not *creola* but *L. p. portlandia*. I have a photograph of the underside that is unmistakable." A previous letter (12 November 1953) from Mr. Clark to Mr. E. N. Lambremont suggested that *L. p. portlandia* be added to Lambremont's manuscript on the butterflies of Louisiana on the basis of the true identity of the female mentioned above. This was done, but *L. creola* was deleted from the list. The type of *creola* is a male and is in the collection of the Academy of Natural Sciences in Philadelphia. Through the courtesy of Dr. H. J. Grant, one of us (B. M.) was permitted to examine the series of *creola* in the Philadelphia Academy of Natural Sciences on 11 July 1957. The type specimen (Type No. 7039), a male, is labelled Opelousas, La. 3 July 1897. The associated female, labelled Opelousas, La. 9 July 1897, carries the following label: "This specimen is actually a female *L. portlandia* and is thus incorrectly designated the allotype of *creola*. Paul R. Ehrlich X-9-51." *L. creola* should therefore be included among the butterflies known from Louisiana.

3. *Euptychia cymela cymela* (Cramer). This subspecies appears to occur generally over the state from March through September, except August. It was taken by Weed in northeast Mississippi in 1891-93 and by

Jones on the Gulf Coast in 1910. It is most abundant in May.

4. *Euptychia hermes sosybia* (Fabricius). This subspecies appears to occur generally over the state from March through November. It was taken in northeast Mississippi in 1891-93 by Weed and in 1920 by Benjamin, on the coast in 1910 by Jones and in 1940 by O'Byrne. It is the most common member of this family in Mississippi. Brown (1949) indicated that it was known from three counties in Mississippi.

5. *Euptychia areolata areolata* (J. E. Smith). This and other names credited to "Abbot and Smith" in Klots' check list (1951) are credited in this report to "J. E. Smith" in accordance with the discussion of the question by Remington (1948) and Meiners (1948). Eighteen specimens are known, from eight localities in six counties, five southeastern and one northeastern; April through October, except May and July. Brown (1949) indicated that it was known from one county in Mississippi. Specific localities and dates are: *Tishomingo Co.*—Burnsville: 28 August 1955. *Forrest Co.*—Mississippi Southern College campus, Hattiesburg: 16 April 1955 (B. J. Miller) (ex coll. B. D. Valentine). *Marion Co.*—Goss: 15 June 1952. *Wayne Co.*—Waynesboro: 20 September 1953. *Jackson Co.*—Ocean Springs (Van Cleave Road): 13 June 1952 (7), 3 October 1953. *Harrison Co.*—Biloxi: 10 April 1921 (F. M. Jones); Gulfport: 4 September 1940 (4) (H. I. O'Byrne), 23 September 1951. The locality in Tishomingo County is within 12 miles of the Tennessee line and appears to constitute a significant extension of the known range of the species.

6. *Euptychia gemma gemma* (Huebner). This subspecies appears to occur generally throughout the state from March through November. It is less abundant than *E. hermes sosybia* and is found slightly earlier in the spring. It is less common in the south than elsewhere in the state.

7. *Cercyonis pegala pegala* (Fabricius). Four records, involving eight specimens, are known: *Forrest Co.*—Maxie: 22 August 1940, ♀, (H. I. O'Byrne); Shelby State Park: 24-25 July 1956 (5) (John L. Daniel). *Harrison Co.*—Gulfport: 4 September 1940, ♂, (H. I. O'Byrne). *Jackson Co.*—Fontainebleau: 3 October 1953, ♀. *Oktibbe-*

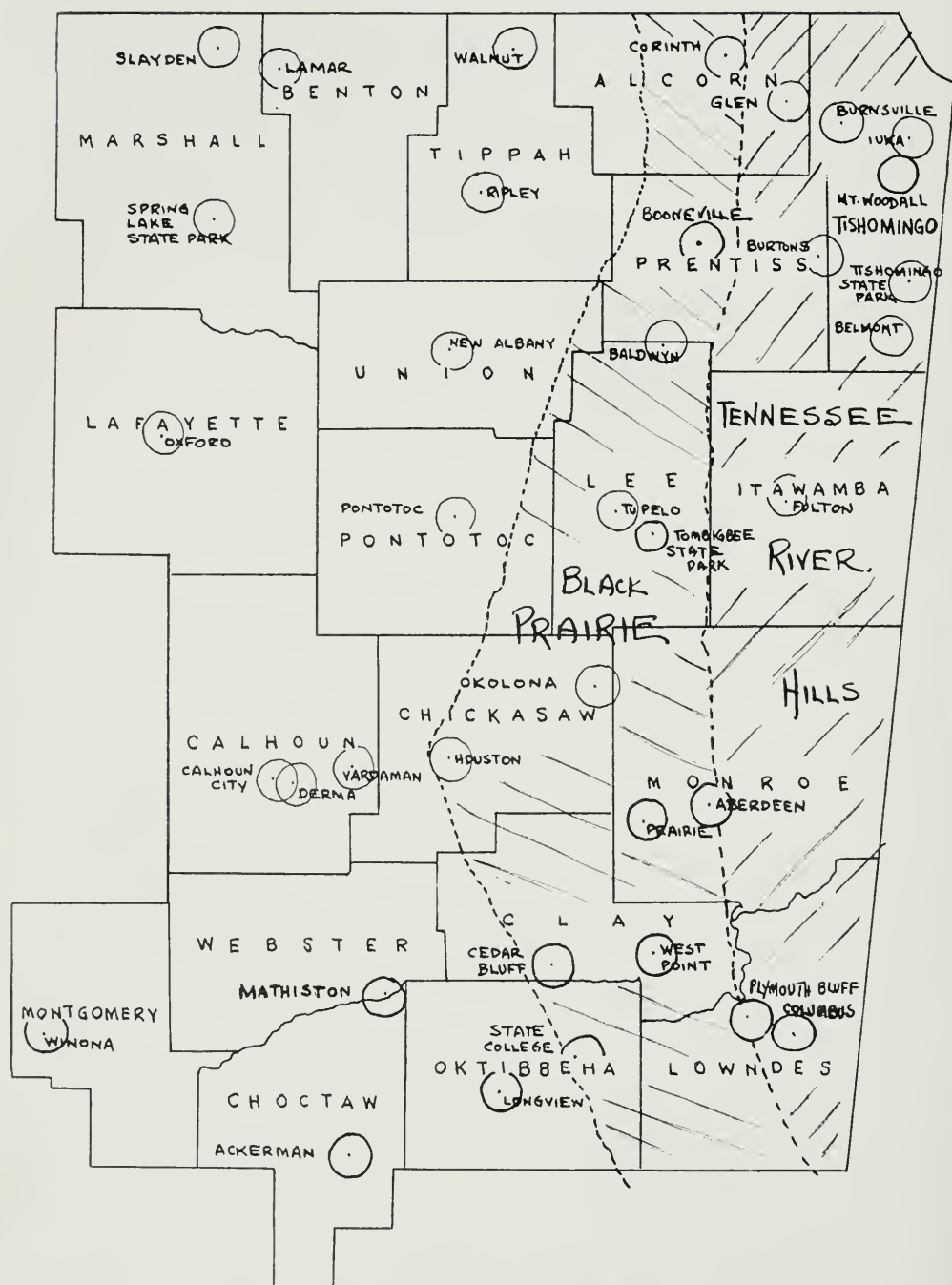


Figure 6. Localities in northeast Mississippi.

ha Co.—1891-93 “not common” (Weed, 1894); “Doubtful occurrence. Specimen in State College collection with no label” (Hutchins, 1933).

FAMILY DANAIDAE

8. *Danaus gilippus berenice* (Cramer). Nine records, each involving a single individual, are known: Harrison Co.—Long Beach: August 1916 (W. J. Frederick) (State College Coll.); Gulfport: September 1916 (C. C. Greer) (State College Coll.), 18 August 1940 (H. I. O’Byrne), 9 August 1953, ♂, forewing length 45 mm; Biloxi: 1910 (F. M. Jones), 8 August 1953 (sight record). Jackson Co.—Ocean Springs: 1891-94 (H. E. Weed) (State College Coll.); Moss Point: 12 May 1952 (sight record) (Lucien Harris, Jr.). Hancock Co.—Bay St. Louis: 14 August 1957 (M. & E. Roshore), ♀, forewing length 42 mm. All of these localities are on the Gulf Coast. These and other data through 1955 were discussed by Mather (1955a.)

9. *Danaus plexippus plexippus* (Linnaeus). Mississippi records through 1954 were discussed recently (Mather, 1955b). Adults have been observed by us in every five-day period from 5-10 March through 20-25 November in one or more of the nine years, 1946-1955. We have observed no winter hibernation and are thus unable to confirm Urquhart’s suggestion (1955) that they overwinter in Mississippi. The earliest arrival we have noted was 8 March 1952, the latest departure 25 November 1953. We can supply some evidence as desired by Williams et al (1942) regarding the northward extension of the zone of complete absence in the summer. If such a zone exists in Mississippi, it does not extend very far to the north. We observed larvae on milkweed on 12 May 1957 and on 29 June 1947. Thomas E. Kennedy collected a number of larvae on milkweed on 27 April 1956 from which he reared a series of adults that emerged early in May. We observed freshly emerged adults on 26 May 1951 and 3 June 1949. Large congregations are frequently seen late in September and early in October, moving south. The annual flight in central Mississippi seems to occupy the period between the last killing frost in the spring and the first in the fall, which occur, on the average, on 19 March and 8 November, respectively. Our specimens

range in forewing length from 41 to 57 mm.

Prof. A. B. Klots examined a series of 65 Mississippi *D. p. plexippus* from our collection (40 ♂♂, 25 ♀♀). He wrote: “The occasional specimen that resembles the tropical subspecies is probably just an individual variant; I don’t think that there are enough of them to warrant even a guess that there may actually be a representation of the non-migratory tropical subspecies. . . . The peculiar female from Clinton, 3 June 1951, is a fairly close match of a female I took in Florida in July, just very recently emerged. Of all your specimens, it could well be a member of a tropical stock.”

FAMILY HELICONIIDAE

10. *Heliconius charitonius tuckeri* Comstock and Brown. On 23 April 1956, in the woods near the Shearwater Pottery, Ocean Springs, Jackson Co., Kilian Roeveer took four specimens. The only Alabama record (Chermock, 1950) was from Fairhope, Baldwin Co. on 22 November 1950. The Louisiana records (Lambremont, 1954) were in August and October. The Mississippi record thus appears to be the only one for it or adjacent states in the spring.

11. *Agraulis vanillae nigrrior* Michener. This subspecies appears to occur generally over the state from July through November. It seems to be more abundant and to be found earlier in the season in central Mississippi in those summers preceded by a mild winter. Mississippi specimens are assigned to *A. v. nigrrior* following Remington (1948), although many show tendencies toward *A. v. incarnata* and the northwestern part of the state is closer to localities in Arkansas from which examples of *A. v. incarnata* are known (Michener, 1942) than to localities in Alabama from which examples of *A. v. nigrrior* are known; no specimens from Mississippi were among those listed by Michener.

FAMILY NYMPHALIDAE

12. *Euptoieta claudia* (Cramer). This species appears to occur generally over the state from February to November. We have reared specimens from larvae on *Passiflora incarnata* at Clinton, Hinds Co. (larvae collected by Tom and R. V. Tye). February specimens are characteristically very small.

13. *Speyeria diana* (Cramer). A female, taken at Gayoso Farm, Horn Lake, De Soto Co., by C. H. Crabill, is in the collection at

State College, where we have examined it. Mr. J. R. Jones, Jr. of Jackson, Miss., told us on 21 June 1953, that in about September 1932 he saw one in Tupelo, Lee Co. Mr. P. A. Glick wrote us on 14 January 1953, that he saw a female at Tallulah, La. near Vicksburg, Warren Co. *S. diana* should therefore be included among the butterflies known from Louisiana.

14. *Melitaea gorgone gorgone* (Huebner). This species is known only from Tishomingo Co. in the Tennessee River Hills. A female, taken in Tishomingo State Park, by Kilian Roever on 20 April 1952, determined by Mr. A. H. Clark as "*M. ismeria ismeria*", was presented to us by Mr. Roever. Roever took additional specimens on 20-21 April 1956 at the same locality and at Mt. Woodall, the highest point in Mississippi, elevation 806 ft. One of us (B.M.) joined him at Mt. Woodall on 21 April 1956 and took a series of six specimens; and on 20 April 1957 and took three more. We have a series of specimens taken by Mr. Lucien Harris, Jr. at Stone Mountain, Ga. and a series taken by Mr. Raymond J. Jae at Red Rocks, Colo. These two series and the specimens from Mississippi were examined by Mr. C. F. dos Passos, on whose advice the Mississippi population is assigned to *M. g. gorgone*. Mr. dos Passos regards *M. g. carlota* as a population occurring in Colorado, Texas, Arkansas, Montana, Washington, Manitoba, Saskatchewan, and elsewhere in the northwest. We were unable to detect consistent differences among our Mississippi specimens, those from Georgia, and those from Colorado. The figure of *M. g. carlota* given by Klots (1951) differs from that of *M. ismeria* given by the Clarks (1951), but some Georgia specimens have the features mentioned by Klots for *carlota*, and some Colorado specimens have the *ismeria* features. Harris (1950) used the name *Phyciodes gorgone* for the species here designated as *P. phaon* and *P. ismeria* for the species here designated as *M. gorgone*. Of the specimens of *ismeria* from Georgia, he wrote that they had been examined by Mr. A. H. Clark who had said that they agreed with others from the west, from Texas to southern Canada. Mr. dos Passos stated that, in series, the difference between eastern *M. gorgone gorgone* and western *gorgone carlota* is quite pronounced,

carlota being much duller on the upper side.

15. *Melitaea nycteis nycteis* Doubleday. This subspecies is quite abundant from time to time in a large number of rather restricted localities. Lambremont (1954) noted that one of the two Louisiana localities was from the Pearl River area near Mississippi. Our records are from Carroll, Hinds, Rankin, and Warren Counties, from April through August. We have taken about 60 specimens.

16. *Phyciodes phaon* Edwards. Thirty specimens are known; March through November. Specific localities and dates are: *Leflore Co.*—Greenwood: July 1955 (John Carr). *Madison Co.*—Pearl River near Goshen Springs: 17 October 1953 (3). *Warren Co.*—Vicksburg: 17 May 1952, 15 November 1952 (4). *Hinds Co.*—Jackson (waterworks): 15 October 1955, 5 November 1955 (3). Brownsville: 8 June 1957 (M. & E. Roshore), Bolton: 1 September 1957. *Amite Co.*—Liberty: 17 September 1955. *Wayne Co.*—Waynesboro: 20 September 1953 (7). *Harrison Co.*—Biloxi: 10 March 1910 (F. M. Jones), 5 April 1910 (F. M. J.), 11 May 1921 (F. M. J.); Long Beach: 2 August 1940 (H. I. O'Byrne); Gulfport: 21 March 1954. *Jackson Co.*—Ocean Springs: 14 June 1952; Fontainebleau: 3 October 1953.

17. *Phyciodes tharos tharos* (Drury). This is of the most common butterflies of Mississippi, found in all months of the year apparently in all localities. It is subject to considerable variation in size and in markings.

18. *Phyciodes texana seminole* (Skinner). One specimen is known, a female, found dead but still relaxed in an open long-leaf pine-oak woods, in Lamar County, three miles west of Hattiesburg, on 3 November 1956 by Prof. and Mrs. Barry D. Valentine. The identification of this specimen was confirmed by Mr. William D. Field.

19. *Polygonia interrogationis* (Fabricius). Weed (1894) reported *P. interrogationis* as quite common on the State College campus and stated that the larvae fed on the cross vine (*Bignonia capreolata*). We have taken specimens in all months of the year. The light "winter" form ("*fabricii*") has been taken as early as 28 August and as late as 6 April; the dark "summer" form ("*umbrosa*") has been taken as early as 17 April and as late as 17 September. It is fairly

common and appears to be generally distributed over the state. It is most easily taken in numbers when attracted to the sap of wounded trees; we have taken it on willow and oak sap.

20. *Polygonia comma* (Harris). This species was not included in Weed's list (1894), but was included in Hutchins' list (1933) presumably on the basis of a specimen taken by Weed at State College, determined by F. H. Benjamin, and now in the collection there. Seventeen additional specimens are known, 15 representing the light "winter" form. Specific localities and dates are: Light form: *Warren Co.*—Vicksburg: 12 February 1952 (2), 3 April 1954. *Hinds Co.*—Brownsville: 13 March 1955, 4 March 1956, 18 March 1956 (2), 25 March 1956, 9 February 1957 (2, one by Thomas E. Kennedy), 3 November 1957 (M. & E. Roshore); *Clinton*: 13 November 1955, 4 March 1956 (John L. Daniel), 24 March 1957, 5 October 1957 (M. & E. Roshore). Dark form: *Hinds Co.*—*Clinton*: 12 May 1957; *Jackson*: 21 May 1957.

21. *Nymphalis antiopa* (Linnaeus). Apparently this species occurs generally over the state. It was taken by Jones at Biloxi, Harrison Co. on the Gulf Coast, by Thomas E. Kennedy in Holmes Co., and by us in Hinds, Warren, Madison, and Tishomingo Counties. Only three specimens with yellow edges are known; we took these in May. Other specimens taken in October, January, February, March, and April, all have white edges. Two specimens with yellow edges were observed at Port Gibson, Claiborne Co. on 22 February 1957 by Warren Grabau.

22. *Vanessa atalanta* (Linnaeus). This species appears generally distributed over the state, but not numerous. It was taken by Jones at Biloxi, Harrison Co. There is a specimen from Oktibbeha Co. in the State College collection. We have taken specimens in all months except January, September, and October at localities in Hinds, Warren, Scott, Claiborne, Madison, and Harrison Counties.

23. *Vanessa cardui* (Linnaeus). Specimens have been taken in February, March, April, July, August, September, October and November. Dates for the spring flights are from 3 February to 7 May; specimens taken between these dates have a median forewing

length of 27 mm (range 25-29 mm). The summer and fall specimens have been seen between 4 July and 21 December and have a median forewing length of 32 mm (range 31-35 mm). It was recorded by Weed (1894) and by Hutchins (1933). It appears to occur generally over the state; records are available from Alcorn, Harrison, Hinds, Holmes, Jefferson Davis, Lee, Montgomery, Oktibbeha, and Warren Counties. We found it present but very rare in 1947 and 1948, rather common in 1949, apparently absent in 1950 and 1951, abundant in 1952, rather scarce in 1953 and 1954, apparently absent in 1955 and 1956, and present in 1957. The size difference between spring and summer forms was reported by Field (1940); the alternation of periods of scarcity and abundance has been noted by Klots (1951), Clark (1932), and others.

24. *Vanessa virginiensis* (Drury). Common throughout the state and throughout the year. We have records for every month. It seems to be attracted to a wide variety of flowers.

25. *Precis lavinia coenia* (Huebner). Common throughout the state and throughout the year. We have records for every month. The variation in color of the hind wings beneath, from buff to purple, is found among specimens in our collection but we have not been able to associate it with a "dry" and "wet" habitat; specimens with both kinds of coloration often are found flying together. We have one specimen, taken at Clinton, Hinds Co. on 10 September 1949, that is very much like the specimen of *P. l. zonalis* (Felder) figured by Klots (1951, Plate 14, fig. 13).

26. *Limenitis arthemis astyanax* (Fabricius). Apparently rather common throughout the state, April through November. Most frequently seen alighting on leaves of tree branches overhanging woods roads at elevations from 10 to 20 feet above the ground. Dr. C. L. Remington, after examining a series of 25 Mississippi specimens, noted that they represent pure *astyanax* very far from any hybridization zone with *artemis*.

27. *Limenitis archippus watsoni* (dos Passos). The Mississippi population is referred to *L. a. watsoni* (dos Passos, 1938) on the advice of Mr. dos Passos who wrote "the majority of your specimens approach

watsoni." One specimen in the O'Byrne collection (Box #130, University of Missouri), taken on 30 August 1940 at Saucier, Harrison Co., was determined by him as *L. a. floridensis*. A male, taken on 14 July 1933 at Iuka, Tishomingo Co., is in the collection of the Los Angeles County Museum (Martin and Truxal, 1955) and was determined as *L. a. archippus* by John A. Comstock. After examining a series of 34 Mississippi specimens (22 males, 12 females), Dr. C. L. Remington wrote: "The males are relatively uniform and are intermediate between our New Orleans series (*watsoni*) and the northeastern population, although closer to the New Orleans form. One male comes near the lightest southern Florida males, and one is of the northern type. The females are much more varied than the males. One taken at Johns, Rankin Co. on 12 August 1956, appears to be identical to New Orleans material, a second is similar, nine are like the males, and one taken at Clinton, Hinds Co. on 29 September 1951 matches many Connecticut specimens." Klots (1951) stated that *watsoni* is an intermediate, blend-zone form; it appears to us that the Mississippi population is an intermediate, blend-zone population. The species appears to be generally distributed over the state. We have records for all months from April through November.

28. *Anaea andria* (Scudder). This species appears to be common and widely distributed over the state. It flies rapidly and is rather difficult to take. We have records for all months. Specimens taken from April into September tend to have less strongly produced forewings and less reddish ground color. Forket (1900) reported taking *Anaea portia* at Ocean Springs, Jackson Co., in April 1899 and seeing one in March 1900. We believe that this report must refer to *A. andria*.

29. *Asterocampa clyton clyton* (Boisduval and LeConte). Klots (1951) stated that *A. c. flora* (Edwards) is found in the Coastal Plain, Georgia, south through Florida and Gulf States. The Mississippi population is assigned to *A. c. clyton* on the advice of Mr. dos Passos, who stated: "I believe that *flora* should be restricted to the Florida subspecies." All of our specimens came from Hinds Co. and were taken on dates in all months from May through October. Weed

(1894) reported it from Oktibbeha Co.; seven Oktibbeha Co. specimens are in the State College collection.

30. *Asterocampa celtis alicia* (Edwards). After examining a series from Mississippi, Mr. dos Passos wrote: "These specimens do resemble *A. c. celtis*, but I feel we must apply the name of the southern population, *alicia*." We have found it common in the vicinity of hackberry trees (*Celtis laevigata*) from April through October. We have noted that it is apparently strongly, and equally, attracted to fresh manure and to us. Individuals have ridden for periods up to ten minutes on our shoulders or on the net handle.

FAMILY LIBYTHEIDAE

31. *Libytheana bachmanii bachmanii* (Kirtland). Apparently this subspecies is common and generally distributed over the state. We have records for all months. It is associated with hackberry, as are the two preceding species. We have observed a group that appeared to regard the hackberry tree in our yard as its territory. We use the spelling *bachmanii* rather than *bachmannii* as used by Klots (1951) on the advice of Mr. Field and Mr. dos Passos.

FAMILY RIODINIDAE

32. *Lephelisca virginienis* (Guérin). This species is apparently widely distributed and probably more common than it appears to be. We have records for all months from March through October. Found in open fields on a wide variety of flowers, especially bitterweed (*Helenium tenuifolium*). Specific localities and dates are: Oktibbeha Co.—State College: 25 August 1931 (R. E. Hutchins). Hinds Co.—Clinton: 16 October 1947, 12 August 1951, 29 September 1951, 30 September 1951, 8 June 1952, 27 July 1954, 24 July 1954, 7 August 1954, 26 July 1954, 1 August 1954, 18 April 1954, 18 October 1953, 24 July 1953, 22 October 1955, 24 June 1956, 1 September 1956, 30 September 1956, 20 October 1956, 7 June 1957, 26 June 1957; Edwards: 8 April 1954. Madison Co.—Natchez Trace: 14 October 1956. Rankin Co.—Johns: 12 August 1956. Wayne Co.—Waynesboro: 19, 20 September 1953. George Co.—Lucedale: 4 October 1953. Forrest Co.—Hattiesburg: 30, 31 March 1955 (B. & B. Valentine), 3 April 1955 (B. & B. Valentine), 25 May 1955 (B. J. Miller). Jackson Co.—

Ocean Springs: 13 June 1952; Van Cleave: 3 October 1953; Fontainebleau: 3 October 1953. *Harrison Co.*—Biloxi: 12 March, 5, 7, 11 April 1910 (F. M. Jones); Long Beach: 2 August 1940 (H. I. O'Byrne); Gulfport: 2 September 1940 (H. I. O'Byrne).

FAMILY LYCAENIDAE

33. *Atalides balesus balesus* (Cramer). After examining a series of specimens, Mr. H. K. Clench suggested that the Mississippi population is intermediate between *A. b. balesus* and *A. b. estesi* Clench, but from somewhat east of the middle of the transition zone. We have taken about 40 specimens on dates in February, March, April, June, September, October, and November. It appears to be widely distributed. Weed and Hutchins report it from Oktibbeha Co. Jones and we have found it on the Gulf Coast. Most of our specimens come from Hinds, Madison, and Warren Counties. We took eight males and four females on wild plum blossoms near Vicksburg, Warren Co. on 3 March 1955. Jung (1950) reported one taken on 30 May 1936 at New Orleans, La.

34. *Strymon m-album* (Boisduval and LeConte). Eight specimens are known: *Jackson Co.*—Moss Point: 9 August 1940 (H. I. O'Byrne). *Hinds Co.*—Clinton: 14 February 1951, 22 February 1957, 29 July 1951, 8 July 1956; Jackson: 3 March 1956. *Warren Co.*—Vicksburg: 3 March 1955. *Tishomingo Co.*—SW of Iuka: 28 March 1953.

Twenty-four additional specimens were taken in Hinds Co. in March 1958: Clinton: 28 March; Raymond: 20 March, 28 March (6), 30 March (5); Brownsville: 16 March (5), 22 March (6) (M. & E. Roshore).

35. *Strymon cecrops* (Fabricius). This is the commonest Mississippi *Strymon*, apparently occurring generally over the state. We have taken it in all months from February through October. In the early spring it is very abundant on fruit tree blossoms and on cedar and young oak leaves; in August and September it is very abundant on flowers such as goldenrod (*Solidago* sp.)

36. *Strymon melinus melinus* (Huebner). This is the second most abundant Mississippi *Strymon* and apparently occurs throughout the state. We have found it from February through October. Hutchins (1933)

wrote: "This is the cotton square borer which often does considerable damage to cotton in the south." We have not found it in very large numbers at any one time and place. Clench, after examining a pair from Mississippi, wrote: "They are probably transitional between typical *melinus* (Fla., and the SE) and *S. m. franki* Field (Kans., Okla., Tex., eastern Colo., etc.)." We assume that the species listed by Weed (1894) as "*T. acadica*" is properly assigned here; no specimen labelled *acadica* is now in the collection at State College.

37. *Strymon favonius* (J. E. Smith). Kilian Roeber wrote that he and A. B. Klots examined a specimen in the collection of the American Museum of Natural History in April 1956, taken by F. M. Jones at Biloxi, Harrison Co., on 12 May 1921. This was not included in the summary Dr. Jones provided to us since that summary was based on a list of specimens he collected in 1910 plus additions from pin-label data on specimens he collected in 1921 that were still in his collection. He was in Biloxi from 9 to 12 May 1921. Presumably this specimen was placed in the AMNM collection prior to the preparation of the summary in 1953.

38. *Strymon ontario ontario* (Edwards). Seventeen specimens are known, all taken at Clinton, Hinds Co.: 8 May 1948 (male), 21 May 1950 (female), 25 April 1953 (five males, three females), 2 May 1953 (female), 6 May 1953 (male), 29 April 1954 (two males, one female), 4 May 1957 (female), 11 May 1957 (male). The two specimens taken in 1948 and 1950 were examined by Mr. dos Passos who wrote: "they appear to be *ontario* and not *autolycus*." A pair taken in 1953 and 1954 was examined by Mr. Clench who wrote: "they are very different from true *ontario*, and I think probably constitute a nameable subspecies." A series, six males and two females, was examined by Mr. H. A. Freeman who wrote: "they look like my specimens from Arkansas, appear to be rather typical *ontario* and are not like the ones from Georgia." Most of our specimens were taken on blossoms of the farkleberry (*Vaccinium arboreum*). Most of the specimens have some orange on the forewing above, but not as much as the specimen shown on Fig. 13, Plate XXIX, of Holland (1947),

more like Fig. 22. Below, they are like Fig. 4, Plate 16, of Klots (1951) not like Fig. 3. Field (1940: 145) stated that *S. o. ontario* never has more than a slight amount of orange on the upper side in a few specimens. Freeman (1951a) stated that Arkansas specimens characteristically have no brown on the forewing above; some however integrate with *S. o. autolycus*. Kilian Roever said that our Mississippi specimens look more like *S. o. ontario* than his from western Tennessee. As noted by Freeman, they are more like *S. o. ontario* than those from Georgia.

39. *Strymon falacer* (Godart). Weed (1894) and Hutchins (1933) listed *S. edwardsii* as known from Mississippi, based on a specimen in the State College collection labelled: "Ag Coll Miss, May 1893, H. E. Weed." We borrowed this specimen and sent it to Mr. Clench for determination; he wrote: "a male, unquestionably *S. falacer*, looks very like our widespread typical *falacer*." We have taken three specimens at Clinton, Hinds Co., two on 21 May 1950 and one on 4 June 1950, on blossoms of New Jersey tea (*Ceanothus americana*). These were examined by A. B. Klots who wrote: "they show the type of variation that characterizes the deep south, clear-cut, slightly bluish marks beneath; in all a darker background and a bolder pattern." Two others were taken, one at Brownsville, Hinds Co., on 19 May 1957; and one at Clinton, Hinds Co., on 9 June 1957, by Mr. and Mrs. E. C. Roshore.

40. *Strymon liparops strigosus* (Harris). Hutchins (1933) stated, "Doubtful occurrence. One badly mutilated specimen in State College collection." We have examined this specimen; it has no wings; the pin labels read: "*Liparops*, June 1896, Ag Coll Miss, H. E. Weed; *Tb. strigosa*; *S. liparops*." We took a female on 30 April 1955 at Raleigh, Smith Co. This specimen has been examined by W. D. Field, Lucien Harris, Jr., Kilian Roever, and John Symmes and determined as *S. liparops strigosus*. Our specimen is assigned to *S. l. strigosus* because it entirely lacks orange brown patches on the wings above. Klots and Clench (1952) stated that *S. l. liparops* consistently has a large fulvous patch on each forewing. The pattern of the markings on the hindwings of our specimen more nearly re-

sembles that of the specimen of *S. l. liparops* (fig. 3 C) than that of the specimen of *S. l. strigosus* (fig. 3 D) illustrated by these authors. Since *S. l. liparops* was described from Georgia and has been recorded from Louisiana (Lambremont, 1954) and *S. l. liparops* was recorded from Arkansas and Tennessee (Klots, 1951), it is not unlikely that the Mississippi population is actually transitional between the two subspecies. Lambremont (1954) stated that the one specimen of *S. l. liparops* known from Louisiana, was taken on 12 June 1950.

41. *Mitoura gryneus gryneus* (Huebner). We have taken about 75 specimens, mostly of the spring brood (February, March, April). "Fall" brood specimens have been taken on 21 July 1956, 1 August 1954, 11 August 1951, and 12 August 1951. A series of 36 Mississippi specimens (four fall, thirty-two spring) was examined by Dr. J. Benjamin Ziegler, who wrote: "They seem to be by and large consubspecific with northeastern *gryneus*. There are perhaps some slight indications of clinal trends towards *castalis* on the one hand and toward *sweadneri* on the other, but individual variation is considerable and it seems that no actual separation is warranted." A series of five (one fall, four spring) was examined by Mr. Clench, who wrote: "They are not eastern *gryneus*; nor are they Florida *sweadneri*." Our specimens have all been taken on or near redcedar (*Juniperus virginiana*), many on white flowers, accompanied by *Strymon cecrops* and, in the spring in some localities, by *Incisalia henrici*.

42. *Incisalia augustinus croesioides* Scudder. One male was taken by Killian Roever on 28 March 1953 at Tishomingo State Park, Tishomingo Co. and was presented by him to us. It was examined by Mr. Clench, who wrote: "very likely represents the southern subspecies *croesioides* Scudder, much paler below than specimens I have seen from Alabama."

43. *Incisalia henrici turneri* Clench. Thirty-two specimens are known: *Tishomingo Co.*—SW of Iuka: 28 March 1953; Tishomingo State Park: 28 March 1953. *Hinds Co.*—Clinton: 1 April 1951; Brownsville: 13 March 1955 (5), 4 March 1956 (2), 18 March 1956 (6), 17 March 1957 (8), 6 April 1957. *Warren Co.*—Vicksburg: 3 March 1955. *Forrest Co.*—Camp

Shelby near Hattiesburg: 17 February 1944 (male) (C. D. Michener, in coll. C. F. dos Passos), 29 February 1944 (2) (C. D. Michener, in coll. AMNH). *Jackson Co.*—Van Cleave: 20 March 1954. *Hancock Co.*—Holly Bluff: 21 March 1954 (2). The Michener specimens in the AMNH are labelled "*Incisalia henrici margaretae*", they were examined on 5 December 1956 by Mr. dos Passos who wrote: "They are one male and one female. In my opinion they are not typical, but one should really have a series from Camp Shelby and the type locality to be positive. Thus far too few of these things have been seen." He also wrote: "I doubt that *Incisalia henrici margaretae* occurs outside of Florida." Three of our specimens were examined by Mr. W. D. Field and determined as *I. henrici henrici trans margaretae*. Mr. Field regarded *turneri* as a synonym of *I. henrici*, noted that no specimens of *I. margaretae* from the type locality were in the collection of the USNM, compared our three with two from Southern Pines, N.C., found that they had somewhat longer tails than typical *henrici* and somewhat less contrasting limbal and basal areas below. dos Passos (1943) stated that specimens from Southern Pines, N.C. suggested that a link between *I. b. henrici* and *I. b. margaretae* might exist. A series of six of our specimens, including the three previously seen by Mr. Field, was examined by Mr. Harry K. Clench, who wrote: "They have little to do with the Florida subspecies *margaretae*, they seem nearly identical to subspecies *turneri* Clench, described from Kansas and occurring from there perhaps south into Texas, eastward at least to southern Ohio. Redbud (*Cercis canadensis*) seems to be the foodplant of *turneri*." Raymond J. Jae of Denver, Colo. wrote regarding one of our specimens, that it checked with topotypes of *I. b. turneri*. A series of 16 of our specimens, including one from the Gulf Coast, two from the Tennessee River hills, and 13 from Hinds Co., was examined by Mr. dos Passos, who wrote: "The sexes do not appear to differ in coloring as they do in New Jersey and superficially all look alike except for size, however, some of your largest specimens are undoubtedly males. I should call them *I. b. turneri*; they are not *I. b. margaretae* nor *I. b. henrici*, so the nearest population which

they resemble would be the proper name to apply. However they do not match *I. b. turneri* exactly either and if a study were made it might develop that a new name is warranted for Texas and Mississippi specimens." Our specimens were taken on cedar, oak, redbud, and wild plum blossoms.

Fifty additional specimens were taken at Brownsville and Raymond, Hinds Co., in March and April 1958.

44. *Incisalia nippon nippon* (Huebner). We have four specimens taken on 28-29 March 1953, SW of Iuka, Tishomingo Co. Kilian Roever took three at the same time, and on 21 April 1956 he took a female ovipositing on pine in Tishomingo State Park.

We took a series of forty-four, 40 ♂♂ and 4 ♀♀, south of Raymond, Hinds Co., on plum blossoms on 15, 22, 28, and 30 March 1958.

45. *Feniseca tarquinius tarquinius* (Fabricius). Fifteen specimens are known: *Hinds Co.*—Clinton: 23 July 1950; Brownsville: 19 July 1953 (3), 25 July 1953 (2), 1 July 1956 (3), 17 March 1957, 8 June 1957 (M. & E. Roshore), 30 May 1957, 6 July 1957 (2). *Jackson Co.*—Van Cleave: 20 March 1954. In a note (Mather, 1952b) on the specimen from Clinton, mention was made that it was taken in the vicinity of hawthorn (*Crataegus*); the Brownsville specimens were taken in the vicinity of beech (*Fagus grandifolia*).

Six additional specimens were taken at Brownsville on 30 March, 4 and 6 April 1958 by M. & E. Roshore.

46. *Lycaena thoë* (Guérin). The single known specimen from Mississippi, a female, was taken by us at Pace, Bolivar Co., on 27 April 1951 at 1 p.m. on pink clover at the side of State Highway No. 8. Mr. Clench wrote that it seems to be typical although the hind wing underside is a bit whiter than usual. A note of this occurrence was published (Mather, 1954a).

47. *Hemiargus ceraunus antibubastus* Huebner. Three specimens are known. One, a male, was taken by us at Lucedale, George Co. on 4 October 1953; another was taken by Kilian Roever at Ocean Springs, Jackson Co. on 23 April 1956; the third was taken at Clinton, Hinds Co. on 6 July 1957 by Mrs. E. C. Roshore.

48. *Echinargus isola alce* (Edwards). We took one specimen at Jackson, Hinds Co. on 25 June 1955. It was examined by Mr. Field and assigned by him to subspecies *alce* Edwards on the basis of considerations previously reviewed by him (Field, 1942). The name used differs from that given by Klots (1951) on the advice of Professor Nabokov (1953) who pointed out that *isola* is not a Latin adjective and thus cannot be rendered *isolus* to agree in gender with the generic name. Other writers have questioned the generic status of *Echinargus*, regarding it as no more than a weak subgenus of *Hemiargus*. Nabokov (1953) noted that *isola* and the two other species he included in *Echinargus* constitute a neotropical group. He regarded *isola* as less securely established in the Nearctic than representatives of other neotropical groups such as *G. marcellus*, *S. melinus*, *P. communis*, and *E. clarus*. He also wrote to us: "There is no such subspecies as *alce* (which is an inconsistent form and thus merely a synonym of *isola*)." Since but one specimen is known from Mississippi there is no basis for assignment of the Mississippi population to a subspecies on the basis of its typical characteristics. The assignment to *alce* serves to provide a convenient citation to a description of the specimen that is at hand. Lambremont (1954) recorded five specimens from Louisiana, all taken in June 1950 at localities 12 to 17 miles west of the Mississippi River. Klots (1951) stated that the range is almost entirely west of the Mississippi River.

49. *Everes comyntas comyntas* (Godart). Common throughout the state and throughout the year except in December and January. Subject to considerable variation in color and size. It is the most abundant member of the family in Mississippi.

50. *Lycaenopsis argiolus pseudargiolus* (Boisduval and LeConte). Apparently generally distributed over the state. We have taken specimens in all months except July, October, November, December, and January. Most frequent in March and April. Hutchins (1933) reported that he had only taken two specimens in Mississippi. The State College collection includes a specimen taken by H. E. Weed at State College, Oktibbeha Co., in May 1893. F. M. Jones took it at Biloxi, Harrison Co., on 7 March and 24

April 1910. Two specimens, taken and determined by F. H. Benjamin, are in the State College collection: 27 June 1920, Longview, Oktibbeha Co., "f. *transneglecta*", and 7 August 1921, Cedar Bluff, Clay Co., "f. *neglecta*". A pair taken at Clinton, Hinds Co. on 8 March 1953 (male) and 6 May 1951 (female) was examined by Mr. H. K. Clench, who wrote of the male: "This spring form is very like the common form I took in the spring in Michigan, and it is not either "*marginata*" or (obviously) "*lucia*". There is a difference between northern and southern Michigan in the spring forms—in the north you get "*marginata*" and "*lucia*" . . . in southern Michigan you get the form like this one from Mississippi, which also occurs in Pittsburgh." Of the May female, he wrote: "Looks like the common summer form, which I cannot distinguish from anywhere in the eastern half of the continent."

We have examined a series of 59 specimens (46 ♂♂, 13 ♀♀) representing dates in the months February through June and August. The variation by sex and month follows. *Males*. February (4): Ground color beneath is pale brownish gray with quite heavy brown spots. March (17): Sixteen are like the March group, one (Van Cleave, Jackson Co., 20 March 1954) has the underside ground color paler and more grayish and has smaller spots. April (8): Beneath all resemble the March specimen from Van Cleave, above four show a tendency to development of a whitish discal area in the hindwing. May (9): Five are quite pale gray beneath with most of the spots smaller and paler but with a few of the spots quite distinct, three are still grayer beneath with the spots even more reduced in size and darkness, one is indeterminate. In six the whitish discal area in the hindwing above is present. June (4): Beneath they are like the group of five from May, two show the whitish discal area in the hindwing above. August (4): The ground color beneath is a little darker than the June group and has a brownish cast, there are a few quite distinct black spots near the anal margin of the hindwing beneath and a few other scattered small but distinct black spots whose location is not constant. All have the whitish discal area on the hindwing above. *Females*. February (1) and March (3): Pale grayish brown beneath,

darker and browner than the February males, with fairly large brown spots. Ground color above is uniformly blue. April (2): Pale gray below with the spots smaller and lighter. Beginning to show white in the discal area of the forewings above. Hindwings above are pale gray with the blue much reduced and concentrated along the veins. May (3): Like the April group except beginning to show sharp dark spots near the anal margin of the hindwing below. June (2): Like May specimens except that the dark spots near the anal margin of the hindwing below are more pronounced. August (2): Like June except that the ground color beneath is beginning to be brownish and the spots are beginning to darken and enlarge.

FAMILY PAPILIONIDAE

51. *Papilio polyxenes asterius* (Stoll). Moderately abundant and apparently generally distributed over the state. We have taken specimens in all months except November through January. It is a pest on our parsley patch. Listed by Weed (1892) from Mayersville, Issaquena Co.

52. *Papilio cressphontes cressphontes* (Cramer). Moderately abundant and apparently generally distributed over the state; March through September. Specimens show considerable variation in size and markings. Apparently associated with hercules club (*Zantboxylum clava-herculis*). A series of 30 specimens (16 ♂♂, 14 ♀♀) showed a forewing length distribution as follows: 54-59 mm: 6 ♂♂; 60-64 mm: 7 ♂♂, 3 ♀♀; 65-69 mm: 3 ♂♂, 5 ♀♀, 70-74 mm: 6 ♀♀. Individual data on these specimens are: *Hinds Co.*—Clinton: 20 May 1956 ♂ 59 mm, 25 June 1949 ♀ 67 mm, 6 July 1952 ♂ 61 mm, 10 July 1955 ♀ 74 mm, 17 July 1947 ♂ 66 mm, 24 July 1954 ♀ 69 mm, 26 July 1952 ♀ 72 mm, 28 July 1956 ♀ 65 mm, 30 July 1955 ♂ 65 mm, 3 August 1953 ♀ 64 mm, 8 August 1954 ♀ 69 mm, 16 August 1952 ♀ 71 mm, 18 August 1952 ♂ 63 mm; *Jackson*: 26 March 1949 ♂ 54 mm; *Brownsville*: 8 April 1956 ♂ 59 mm, 1 July 1956 ♂ 59 mm, ♂ 62 mm, 19 July 1953 ♂ 59 mm, ♂ 61 mm. *Warren Co.*—Bovina: 31 July 1955 ♂♂ 61, 63, 64 mm, ♀♀ 71, 73 mm, 2 August 1956 ♀ 62 mm, 7 August 1955 ♀ 64 mm. *Ballground*: 16 August 1952 ♂ 55 mm, ♀ 70 mm. *Jackson Co.*—Moss Point: 14 June

1952 ♂ 69 mm. *Harrison Co.*—Biloxi: 14 June 1952 ♀ 69 mm.

53. *Papilio glaucus glaucus* (Linnaeus). Moderately abundant and apparently generally distributed over the state; March through October. All females so far found by us have been dark, although one shows a dusting of yellow scales. Prof. Ralph Chermock wrote us that "In south Alabama the specimens are referable to *P. glaucus australis*, northern examples are *P. g. glaucus*, with a cline between." Prof. Barry Valentine wrote that he took a yellow female together with three males on 13 August 1950 at Akron, Hale Co., Alabama, a locality within 35 miles of the Mississippi line and 180 miles north of the Gulf of Mexico. Dr. Lincoln P. Brower wrote that there is a yellow female from Biloxi, Harrison Co. in the collection of Mr. C. F. dos Passos. Early spring specimens tend to be quite small; a male taken at Clinton, Hinds Co. on 8 March 1953 had a forewing length of 36 mm. Fall specimens are quite large; a female taken at Hattiesburg, Forrest Co. on 23 September 1951 had a forewing length of 68 mm. These data were discussed by Mather (1954b).

54. *Papilio troilus ilioneus* J. E. Smith. This is the most abundant swallowtail in Mississippi; apparently generally distributed over the state; February through October. The Mississippi population is assigned to *P. t. ilioneus* on the advice of Mr. dos Passos who examined a series of seven Mississippi specimens, five males and two females.

55. *Papilio palamedes palamedes* (Drury). Apparently fairly common in the southern part of the state, rare in central and northern Mississippi. One specimen taken by A. J. Laoner at State College, Oktibbeha Co. on 1 April 1950 is in the collection there. We took specimens at Clinton, Hinds Co. on 27 June 1948 and 19 July 1952; all other records are from the southern counties; March through October.

56. *Graphium marcellus marcellus* (Cramer). Apparently generally distributed and locally rather abundant; February through August. The spring form, with shorter tails, is found from February through April; the summer form, with longer tails, May through August. The earliest record that we have is of a specimen taken at Ball-

ground, Warren Co. on 9 February 1957 by Mrs. E. C. Roshore.

57. *Battus philenor* (Linnaeus). Weed (1894) reported *philenor* as much rarer in northeastern Mississippi than *P. troilus* which he said was very common. Hutchins (1933) reported *philenor* as common about with honeysuckle bushes in the spring. Our records indicate it to be second in abundance in Mississippi only to *troilus* among the swallowtails. We have records from 22 localities in 15 counties located in all sections of the state. We have examined a series of 74 specimens taken on dates in all months except November, December, and January. Our earliest specimen was taken on 9 February 1952 at Jackson, Hinds Co., our latest on 17 October 1953 on the Pearl River, Madison Co. The series of 74 specimens included 62 males and 12 females. The mean forewing length of the series is 45.40 mm and the standard deviation is 5.90 mm. The greatest forewing length is 59 mm, a female from Jackson, Hinds Co., taken on 18 August 1956; the least is 32 mm, a male from Brownsville, Hinds Co., taken on 13 March 1955. The largest males have a forewing length of 56 mm and were taken at Crystal Springs, Copiah Co., 21 August 1955 and at Clinton, Hinds Co., 30 August 1952. The smallest female has a forewing length of 38 mm and was taken at Mt. Woodall, Tishomingo Co., 20 April 1957. One specimen, a male taken at Clinton on 11 May 1952, having a forewing length of 44 mm, has very short tails. A few males are distinctly greenish, a few are royal blue. The mean forewing length of the males is 45.34 mm; that of the females is 45.75 mm. The observed range, 32 to 59 mm, is approximately ± 2.3 times the standard deviation. Only 2 of the 74 specimens have forewing lengths outside the range of plus and minus two standard deviations from the mean. Brown (1951) noted that, on the average, in a perfectly random sample of 100 specimens from a homogeneous population, five specimens will differ from the mean by more than two standard deviations. The tendency for size to increase through the year from spring to fall was reported by the Clarks (1951) who said that, in Virginia, the early spring individuals appearing shortly after the middle of April had forewings about 40 mm long, while

summer individuals had forewings 50 to 55 mm long in males and 50 to 60 mm long in females. Field (1940) stated that the spring form had forewings "never more than 40 mm in length" and the typical form had forewings between 45 and 55 mm in length. The disproportionate sex ratio does not seem to have been commented on previously although it is suggested by Lambremont (1954) whose series from Louisiana included 13 males and four females. His earliest date was 1 February 1949 and his latest 16 October 1940. Five of the specimens in our series were taken by Wilbur I. Luke and one each by Olivette C. P. McGough and Thomas E. Kennedy.

FAMILY PIERIDAE

58. *Anthocaris genutia* (Fabricius) Apparently widespread but local. We have taken 54 specimens (45 ♂♂, 9 ♀♀). Specific localities and dates are: *Tishomingo Co.*—Tishomingo State Park: 20 April 1952 (2 ♂♂) (Kilian Roever), 28 March 1953 (♂). *Marshall Co.*—Spring Lake State Park: 20 April 1952 (3 ♂♂, 2 ♀♀). *Oktibbeha Co.*—State College: 1 April 1917 (3 ♂♂) (collector not known), 19 April 1950 (♂) (C. Blackwell). *Clay Co.*—West Point: 11 April 1954 (♀). *Hinds Co.*—Clinton: 6 April 1947 (♂), 17 April 1949 (♂, ♀), 18 March 1950 (3 ♂♂), 3 March 1951 (2 ♂♂), 10 March 1951 (♂), 25 March 1951 (4 ♂♂), 31 March 1951 (♂), 1 April 1951 (2 ♂♂), 29 March 1952 (♂), 7 April 1952 (2 ♂♂), 19 April 1952 (♀), 8 March 1953 (3 ♂♂), 15 March 1953 (5 ♂♂), 21 March 1953 (2 ♂♂), 5 April 1953 (2 ♂♂), 26 March 1954 (2 ♂♂), 30 March 1954 (♀), 1 April 1954 (♀), 4 April 1954 (♀), 20 March 1955 (2 ♂♂), 17 March 1956 (♀) (John L. Daniel), 1 April 1956 (♂, ♀), 16 March 1957 (2 ♂♂), 24 March 1957 (♂). *Brownsville*: 13 March 1955 (♂). *Bolton*: 5 April 1953 (2 ♂♂). From these data it will be apparent that we have no data from the southern counties and no evidence of a second brood. It is also apparent that the males emerge earlier than the females.

59. *Colias eurytheme* Boisduval. We have more than 600 records of the occurrence of *C. eurytheme* in Mississippi. These records involve 74 localities in 47 counties distributed throughout the state, including

all physiographic regions; and dates in all months of the year. Weed (1894) reported *C. eurythyme* as very abundant throughout the year. Hutchins (1933) reported it as very common. A series of 227 specimens in our collection included 118 males and 109 females (45 orange, 64 white) taken at localities in 14 counties and on dates in all months. A study of time distribution of the records and of the data on the series of 227 specimens suggests that there are periods of spring and fall abundance separated by periods of summer and winter scarcity. The period of spring abundance begins about the first of February when the average temperature has risen to about 50°F and continues until about mid-June when it reaches about 80°F. The period of fall abundance begins about mid-October when the average temperature has fallen to about 60°F and continues until about the first of December when it falls to about 50°F. We have no indication that adults are ever completely absent during either period of scarcity. There have been three Januaries in the 10-year period, 1947-57, in which we have observed no adults flying, but there have been days in almost every year on which they have been seen in spite of freezing weather earlier the same day. Hovanitz (1951) reported that *C. eurythyme* was found in northern Florida only during February, March, and early April, and in October or November. He stated that it does not seem to maintain itself for a longer period in the consistently warm and humid summer climate. He wrote (1953): "... in the Gulf Coast, the hot, humid weather appears to destroy the populations completely." Our records for the Mississippi counties along the Gulf Coast are not numerous but they include not only March, April, and October, but also May, June, and August; specifically: Harrison Co.—Gulfport: 4 May 1952, 12 June 1952. Jackson Co.—Pascagoula: 14 June 1952, Moss Point: 14 June 1952, Ocean Springs: 8 August 1953.

Hovanitz (1950b) indicated that the percentage of white females of *C. eurythyme* to be expected in this region would be in the range of 20-25 percent. Our data do not permit accurate verification of this range because of our bias in collecting. Of 109 females in our collection, 64 are white. This reflects, in part, our tendency to collect

white females preferentially. It is our impression that of the order of 30 percent of the females are white. Of the females in our collection, we have more white than orange for all months for which we have more than seven females, except for February. Of nineteen February females, 7 are white, 12 are orange. We believe that this ratio is close to that for the population, since our February collecting has been less selective than at other times of the year. We doubt that we could, using normal manual collecting techniques, collect a random sample from an abundant population containing varieties that are recognizable at a distance and present in significantly different proportions. Gerould (1946) found in 1943 that when he and non-technical assistants both collected *C. eurythyme* and *C. philodice* in New Hampshire, *C. eurythyme* made up 11.8 per cent of the 762 specimens he collected and only 7.4 percent of the 1090 collected by others. Although he tried to collect at random he was unable to avoid preferentially collecting the rarer variety.

Our data refer to a *C. eurythyme* population for which alfalfa (*Medicago sativa*) is not an important food plant. Alfalfa is grown on less than 0.1 percent of Mississippi farm land and over 60 percent of the alfalfa acreage is in four northwestern counties along the Mississippi River (Bolivar, Coahoma, Tunica, and Washington) from which we have no specimens. The majority of our specimens came from Hinds Co. in which in 1949, there were but 36 out of 440,000 acres of farm land in alfalfa (U.S. Bureau of the Census, 1952). We understand that less and less alfalfa has been grown in Hinds Co. in the years since 1949. We have virtually no data on plant preferences, most of our specimens having been taken in fields that had not been seeded to any given crop. We have taken specimens on white clover, red clover, crimson clover, and white sweetclover. We have seen a female oviposit on a low yellow-flowering legume locally known as lespedeza. Hovanitz (1948) stated that *C. eurythyme* does not find red clover (*Trifolium pratense*) a suitable food; Clark (1932) reported that he had found females of *C. eurythyme* ovipositing on red clover. Hovanitz (1943a) stated that in California *C. eurythyme* does not have definite broods. Our observations

rend to suggest that this is likewise the case in Mississippi.

The variation of size, wing shape, color, and pattern of *C. eurytheme* has been described by many authors. The Mississippi population shows most of the types of variation described in detail by the Clarks (1951). Small pale males are found from November to April and have forewing lengths in the range 17 to 23 mm, with a mean of 20 mm. Large dark males are found throughout the year, mostly from April until November, with forewing lengths from 22 to 30 mm, with a mean of 25 mm. The females have forewing lengths from 18 to 32 mm. The white females do not appear to have a significantly different forewing length distribution from that of the orange females. The smallest and largest specimens in our series are: *Males*. 17 mm Clinton, Hinds Co. 20 February 1949; 30 mm Clinton, Hinds Co. 31 May 1948; *Orange females*. 18 mm Clinton, Hinds Co. 8 February 1953; 31 mm Clinton, Hinds Co. 5 October 1952, 21 October 1951, 23 November 1950, Natchez Trace, Madison Co. 17 October 1953; *White females*. 19 mm Jackson, Hinds Co. 13 February 1954, Clinton, Hinds Co. 22 February 1949, 30 May 1951; 32 mm Vicksburg, Warren Co. 15 November 1952. The hindwing lengths of the specimens in the series range from 13 to 25 mm. The forewing lengths average 1.3 times the hindwing lengths. We took one orange female on 5 June 1949 at Clinton, Hinds Co. that had its left forewing reduced to about one half the area of the right forewing, left forewing length 16 mm, right forewing length 28 mm.

Females show greater variation in color and pattern than males, white females show greater variation than orange females. The discal spot on the hindwing above is orange in all of the 118 males and in all of the 45 orange females, becoming red in some dark November individuals. Among the 64 white females it is orange in 45, yellow in 18, and straw colored in one taken at Clinton, Hinds Co. on 6 May 1953 having a forewing length of 26 mm. Remington (1954) noted that the color of this spot is not a good species recognition character. The width of the marginal black band in the forewing above in the females and the degree to which it borders the included or-

ange, yellow, or white spots inwardly, have been suggested as characters for separating *C. eurytheme* and *C. philodice*. Among the 45 orange females, eight February specimens and one March specimen have the narrower border that characterizes typical *C. philodice*. The 64 white females show greater variation. One October specimen has very wide black borders with no white spot between veins Cu_1 and Cu_2 and only very small white spots anywhere within it. One May specimen has the white spots so enlarged that they occupy nearly half the area of the black border but are still well bordered inwardly by black. One specimen each taken in March, May, November, and December, and three taken in April have the inner black boundary of the white marginal spot between Cu_1 and Cu_2 obsolescent as in typical *C. philodice*.

Among the 64 white females there are three that have a distinctly cream color: *Jackson Co.*—Pascagoula: 14 June 1952, forewing length 30 mm; *Harrison Co.*—Biloxi: 4 October 1953, 31 mm; *Hinds Co.*—Clinton: 15 November 1953, 29 mm. The first two taken on the Gulf Coast, have the hindwing discal spot above orange, in the third, this spot is yellow.

The distribution of data on month of capture and forewing length by major classes for the 227 measured specimens is given in Table 1.

60. *Colias philodice* Godart. We credit this name to Godart rather than to Latreille on the advice of Mr. dos Passos. Klots (1951) apparently followed the conclusions reached by Brown (1941) on this question. On the basis of additional information, Mr. dos Passos reached a different conclusion. We assign to this species the specimens of the *C. eurytheme*-*C. philodice* complex, the ground color of which is completely yellow; no orange. Such specimens are rare in Mississippi; there are four in the State College collection; we have taken five others, all but one of our specimens were taken while they were flying in company with *C. eurytheme*. Weed (1894) reported *C. philodice* as quite abundant, but not so much as *C. eurytheme*. Hutchins (1933) reported *C. philodice* as common. Lambremont (1954) found it rare in Louisiana, only one specimen being known. Hovanitz (1950a) indicated the southern limit of the distribu-

TABLE 1. Collection data and forewing lengths for *Colias eurytheme*.

month	small			large			grand		
	—MALES—			—FEMALES—			total		
	pale	dark	total	orange	white	total			
Jan.	3	0	3	0	0	0			3
Feb.	77	1	78	12	7	19			97
Mar.	8	0	8	3	8	14			22
Apr.	1	8	9	3	13	16			25
May	0	6	6	6	10	16			22
June	0	2	2	4	3	7			9
July	0	0	0	0	1	1			1
Aug.	0	1	1	1	0	1			2
Sep.	0	0	0	2	0	2			2
Oct.	0	1	1	6	14	20			21
Nov.	2	3	5	5	8	13			18
Dec.	4	1	5	0	0	0			5
total:	95	23	118	45	64	109			227
length mm									
17	1	0	1	0	0	0			1
18	5	0	5	1	0	1			6
19	26	0	26	0	3	3			29
20	29	0	29	4	5	9			38
21	18	0	18	3	2	5			23
22	12	3	15	3	1	4			19
23	4	1	5	8	8	16			21
24	0	4	4	3	4	7			11
25	0	4	4	3	8	11			15
26	0	3	3	4	5	9			12
27	0	4	4	3	4	7			11
28	0	2	2	3	10	13			15
29	0	1	1	4	3	7			8
30	0	1	1	2	5	7			8
31	0	0	0	4	4	8			8
32	0	0	0	0	2	2			2

tion of *C. philodice* by an east-west line crossing central Mississippi. Specific localities and dates are: *Oktibbeha Co.*—State College: May 1893 (H. E. Weed) (4). *Lowndes Co.*—Plymouth Bluff: 13 October 1950, male. *Tippah Co.*—Ripley: 14 October 1950 (sight record). *Hinds Co.*—Clinton: 23 January 1949, male, determined by A. H. Clark; 13 October 1953, female; 25 October 1952, female; Raymond: 22 August 1957, female. Some of the white females assigned to *C. eurytheme* may belong to *C. philodice*. These records include localities only in the northern half of the state and only the months of January, March, May, August, and October. The January male closely resembles a large number of small pale *C. eurytheme* males except that it lacks orange coloration. It has a forewing length of 18 mm. The October male has a forewing length of 23 mm; the only October *C. eurytheme* male in our series has a forewing length of 27 mm. The two October females have forewing lengths of 26 and 27 mm. We have two white October females with 26-mm forewings and two orange October females with 27-mm forewings. The 25 October 1952 female has the large yellow spot in the black margin of the forewing above, between veins Cu_1 and

Cu_2 , separated from the yellow ground color inwardly, by only a very faint dark line; the 18 October 1953 and 22 August 1957 females have this spot as fully surrounded by black as is characteristic of most *C. eurytheme*. Three of our five specimens have the discal spot on the hindwing above yellow, it is orange in the 25 October 1952 and 22 August 1957 females. Four of our specimens were examined by Dr. William Hovanitz who confirmed their determination as *C. philodice*; he commented that the two October females were "typical summer *philodice*."

We have four specimens, all males, that have been determined as definite or probable *eurytheme* x *philodice* hybrids. All of these were taken at Clinton, Hinds Co. One, taken on 3 March 1951, was determined by Mr. A. H. Clark. Dr. Hovanitz commented on this specimen as follows: "may be an F_1 hybrid or even more *eurytheme* than seems apparent . . . since the cold reduces the orange pigment in the forewings of *eurytheme* to an area on the lower basal part of the wings, it is difficult to analyze the hybrid products when confused by temperature effects." Among 263 specimens of *C. eurytheme* taken by us in Mississippi, Dr. Hovanitz noted no signs of hybridization among the 51 orange females and commented that while there might be one or two *philodice* females among the 67 white specimens, he could not detect any. Of the 145 males he commented on three: (1) 16 January 1955: "probably a hybrid as it shows no orange flush at all on the forewing—this is not certain though." (2) 6 February 1957: "may be a hybrid or segregation product, showing little orange." (3) 29 May 1950: "is certainly a *philodice-eurytheme* intermediate, Grade 3 orange according to my scale. Most likely not an F_1 but rather an F_2 or backcross to *philodice*."

61. *Zerene cesonia* (Stoll). Apparently generally distributed over the state but found only in very restricted localities. We have records for all months except November, January, and February. All of our specimens have been taken at five localities, three of which have yielded only a single specimen each: *Tishomingo Co.*—Burnsville: 28 August 1955 (1). *Lowndes Co.*—Plymouth Bluff: 13 October 1950 (1). *Harrison Co.*—Gulfport: 23 September

1951 (1). *Hinds Co.*—Clinton: 15, 21, 24 March, 23 April, 2, 8, 12, 14, 27, 31 May, 1, 5, 13 June, 19 July, 1 August, 27, 29 September, 1, 5, 17, 18, 19 October, and 12 December; Jackson: 3 April; 4, 18 May; 1, 30 June; and 6 July. Additional records are: *Harrison Co.*—Biloxi: 26 March 1910 (F. M. Jones). *Tishomingo Co.*—Tishomingo State Park: 20 April 1952 (Kilian Roever). *Oktibbeha Co.*—State College: 1950 (State College collection).

We have examined a series of 36 Mississippi specimens representing dates from 15 March through 19 October. There were two problems that we encountered in attempting to discuss the variation displayed by this group. First, we had difficulty in being positive about the assignment of certain specimens to the proper sex. Holland (1931) noted that "the sexes are much alike," but he figures one of each. His figure of the female is the only one that we found. Macy and Shepard (1941) wrote: "In the male the outer margin of the hind wing has a heavy black border that is nearly absent in the female." Klots (1951), alone among the authors whose work was available to us, noted that: "The male has a conspicuous sex patch near the base of the costa of the HW." We have six specimens that possess an oval orange or yellow patch at this location, that is partially opaque when the specimen is viewed in transmitted light, that we would otherwise have classed as females, since the black border of the hindwing above is very much reduced, is discontinuous, and where present extends inward as narrow rays along veins. Second, we had difficulty deciding whether we could properly employ the form name "rosa" McNeill for any of our material. It was not clear from the literature available to us whether this name applied to a population or to individuals. Mr. dos Passos wrote us that form "rosa" was described from specimens taken at Moline, Illinois on 16 September that were the third, or at least the fall, brood there, and that the females were very distinct in that the yellow on the underside of the secondaries is entirely replaced by pink. He also noted that Mississippi specimens that we had taken in April and December that showed a pink flush were not fall-brood specimens. Field (1940) wrote: "Typical *caesonina* [sic] is

the summer form. It lacks any and all pink coloration that may be found on the underside of the wings . . . the fall form is "rosa" McNeill. It differs from typical *caesonina* in having a pink flush or pink markings on the underside of the hind wings." Of the 36 specimens we examined, 25 have no pink beneath except for a very narrow pink border along the outer edge of the forewing in a few, while 11 have considerable pink. Those with considerable pink were taken between 27 September and 23 April and include all but four of the specimens taken in that period. All the specimens that show considerable pink beneath have discontinuous black margins of the hindwing above, however, five have the yellow or orange semi-opaque basal patch. The four specimens with the greatest development of pink are: 27 September 1949 (♀, 32 mm), 5 October 1953 (♂, 31 mm), 18 October 1952 (♀, 28 mm), and 21 March 1953 (♀, 30 mm). Forbes (1949) noted that form "rosa" occurs in males as well as in females but that there is less of the rose tint in males than in females. He also stated: "It is not a sharply defined seasonal form, but essentially statistical."

Many authors call attention to the pointed apices of the forewings. We note, among our specimens, considerable variation in the degree of development of pointedness, ranging from individuals where the apex is only slightly more acute than a right angle to others in which it is distinctly prolonged and arcuate. The tendency to be arcuate seems more likely to be developed in fall and spring specimens than in summer individuals.

Seven of the ten females in our series have indistinct yellow patches within the apical black area of the forewing above.

The forewing lengths of the series of 36 specimens range from 23 to 33 mm. Except for one 23-mm male (Clinton, Hinds Co. 2 May 1954) and one 33-mm male (Burnsville, Tishomingo Co. 28 August 1955), the males have forewing lengths in the range 26 to 31 mm and the females in the range 28 to 33 mm. There does not seem to be any general tendency for forewing length to change with date of capture.

62. *Anteos maerula lacordairei* (Boisduval). Prof. and Mrs. Barry D. Valentine showed us a specimen, a male, taken on the

campus of Mississippi Southern College, Hattiesburg, Forrest Co. in August 1955, by Miss Laurie Segars. It was taken feeding on blossoms of *Abelia grandiflora*. The date on which it was taken was approximately one week after a tropical storm.

63. *Phoebis sennae eubule* (Linnaeus). Generally distributed over the state, the commonest member of the family, found in all months. Listed by Weed (1892) from Mayersville, Issaquena Co. Migrations have been reported near Oxford, Lafayette Co. (Jones, 1943), at Biloxi, Harrison Co. and at Bay St. Louis, Hancock Co. (Williams, 1938; Williams et al, 1942). We observed movement from left to right (northwest to southeast) while driving northeast on the Natchez Trace Parkway from Ridgeland, Madison Co. to Kosciusko, Attala Co. on 31 August 1952 and on 29 August 1953. Of the 300 to 400 individuals observed on each occasion, all but 4 or 5 were moving in the same direction. Hutchins (1956) reported that the direction of autumn movement is southeasterly in Mississippi. Hutchins (1953) reported that a "yellow sulfur butterfly" was able to hold its position in a wind tunnel against a 7 m.p.h. wind. We assume that the specimen was a *P. s. eubule* taken at State College, Okibbeha Co.

We have examined a series of 46 specimens in our collection (27 ♂♂, 19 ♀♀) representing dates in all months and localities in seven counties. This series includes one female (Clinton, Hinds Co., 8 July 1952) that is very pale yellowish white and several that are noticeably paler than the rest of the group. Five of the females, taken in July and August, and eight of the males taken on dates from 30 May to 6 October, have the dark markings beneath greatly reduced and presumably represent the form "drya" Fabricius. We have no specimens that show a tendency to orange coloration. We have taken seven specimens because they were noticeably smaller than average; data and forewing lengths of these are: Clinton, Hinds Co., 6 October 1953, ♂, 23 mm; Jackson, Hinds Co., 25 July 1953, ♀, 24 mm; Clinton, 28 July 1947, ♀, 24 mm; Bovina, Warren Co., 31 July 1955, ♂, 26 mm; Clinton, 2 December 1956, ♂, 27 mm; Jackson, 28 January 1956, ♂, 28 mm; and Clinton, 12 October 1952, ♂, 28 mm. The remaining 39 speci-

mens have forewing lengths in the range 30 to 37 mm, the median length for the males is 34 mm, that for the females is 33 mm.

Mr. F. Martin Brown examined a series of 62 specimens (35 ♂♂, 27 ♀♀) from our collection. Although he regarded it as possible that *P. s. sennae* exists as discrete colonies in southern Louisiana, where the climate is more tropical than temperate, he concluded that all of our Mississippi specimens should be determined as *P. s. eubule*. The most heavily marked of our specimens approach *P. s. sennae* in appearance, but should not be so designated. He found no indication of the tropical mainland form, *P. s. marcellina*, that strays as far as Colorado. He noted that we could use the form name "drya" Fabricius, for the late summer broods with the least markings beneath; and the form name "browni" Field, for the whitish females; but he doubted the desirability of so doing.

64. *Phoebis philea* (Linnaeus). Hutchins (1933) wrote: "Rather common in southern sections, but rare in northern part." Hutchins' observations were made between 1929 and 1933. Specimens of *P. philea* taken in New Orleans, La. in 1932 are reported by Lambremont (1954). Tietz (1952) reported that *P. philea* was taken at State College, Pa. and in Wisconsin in 1930. We believe that *P. philea* was found in Mississippi during the period in which Hutchins was working and that it may be expected to be found again. We therefore include it among the list of those regarded as known from the state even though no specific record or specimen is known to us. It is the only species so listed for which we have no specific record.

65. *Eurema daira daira* (Latreille). We follow Klots (1951) in including here, as forms, the material sometimes assigned to two species *E. jucunda* and *E. delia* (or *E. daira*). Generally distributed over the state, locally abundant, February through December. It was mentioned by Klots (1951) as found in Mississippi. We have taken the summer form ("jucunda") from 7 April to 13 October, transitional forms ("delioides") from 28 September to 25 October, and the winter form ("daira" or "delia") from 16 September to 21 March. We have taken specimens of two or of all three forms fly-

ing together at Biloxi, Harrison Co. on 23 September 1951, at Ocean Springs, Jackson Co. on 3 October 1953, at Waynesboro, Wayne Co. on 19 September 1953, at Clinton, Hinds Co. on 1 October 1950 and 5 October 1952, at Plymouth Bluff, Lowndes Co. on 13 October 1950, and at Hattiesburg, Forrest Co. on 16 September 1955. The transition from one form to the other seems to coincide approximately with the time during which the average temperature is changing from greater than to less than the mean annual temperature or vice versa. Klots (1948) commented on work reported by Haskin in 1933 that it "strongly suggests the likelihood of *jucunda* being a hot-season form and *daira* a cold-season form of the same species." The average forewing length of a series of 40 Mississippi "*daira*" is 17.3 mm (range 16-19) and of 46 "*jucunda*" is 16.2 mm (range 14-18). Holland (1931) indicated that *jucunda* was larger than *daira* and that there was no overlap in size; such does not seem to be the case with the Mississippi population (Mather, 1956b).

66. *Eurema mexicana* (Boisduval). One specimen is known. It is in the State College collection and is labelled "Agri Coll Miss. IX-13-1917, J. A. Thomas." We have examined this specimen, as has Mr. dos Passos who confirmed the determination.

67. *Eurema nicippe* (Cramer). Apparently generally distributed over the state; frequent but not often numerous. We have examined a series of 50 specimens, 29 males and 21 females, representing dates in all months and 14 localities in nine counties (Amite, Covington, Harrison, Hinds, Jefferson, Rankin, Walthall, Wayne, and Wilkinson). The average forewing length was 22 mm; the range from 16 to 25 mm. Males had an average forewing length of 21.8 and a range of from 18 to 25, females averaged 21.6 and ranged from 16 to 25 mm. A majority of the specimens (33) were taken in the four months August through November. Twenty-one specimens (10 ♂♂, 11 ♀♀) had the hindwings beneath brown or tan, without yellow; these included all specimens taken in December, January, February, and April plus three of four taken in March, seven of nine taken in November, three of six taken in October, and one of ten taken in September. The remaining 29 had yellow on the hindwings

beneath, varying from clear yellow to yellow with brown or tan markings or mottling; these included all specimens taken in May, June, July, and August. These data suggests that size does not vary with sex or season and that the color of the hindwing beneath varies with season but not with sex.

68. *Eurema lisa lisa* (Boisduval and LeConte). Generally distributed, often common, May through December and January. Females with very light yellow to white ground color are fairly frequent. We have no records of migratory activity in Mississippi.

Prof. A. B. Klots examined a series of 71 Mississippi *E. lisa lisa* from our collection (29 ♂♂, 42 ♀♀). He wrote that they looked quite normal for North American material and that they fit in quite well with the rest of the South. He concluded that a male, taken at Vicksburg, Warren Co., 13 October 1956, could be called form "clappi."

69. *Nathalis iole* (Boisduval). Apparently generally distributed, sometimes locally abundant, June through November, most common September to November.

70. *Pieris rapae* (Linnaeus). Generally distributed, sometimes common, found in all months.

71. *Pieris protodice protodice* (Boisduval and LeConte). Apparently generally distributed over the state, much less common than *P. rapae*, found in all months except January.

72. *Ascia monuste phileta* (Fabricius). Five occurrences are known: on 20 October 1922 A. McIntosh took three specimens, all white, at Summit, Pike Co. (they are in the State College collection); on 14 May 1950 we took one white male at Clinton, Hinds Co.; between 13 and 15 June 1952 we observed an eastward migration along the Gulf Coast in Jackson, Harrison, and Hancock Counties. We took 19 specimens: eight males, eleven females (one white, ten gray). Additional details of this occurrence are given in a paper (Mather, 1953). A specimen of the gray form was seen but not taken at Jackson, Hinds Co. on 7 July 1957. Mr. and Mrs. E. C. Roshore took a series of seven specimens (3 ♂♂; 4 ♀♀; one white, three gray), at localities in Harrison and Hancock Counties on 12, 13, and 14 August 1957. These specimens were taken feeding

or at rest and showed no tendency to migrate. Chermock (1950) reported an eastward migration in 1950 on Dauphin Island and the Fort Morgan Peninsula, Mobile Bay, Ala. Jung (1950) stated that it is: "the most common of the white pierids in residential New Orleans."

SUPERFAMILY HESPERIOIDEA

FAMILY HESPERIIDAE

73. *Epargyreus clarus clarus* (Cramer). Apparently generally distributed over the state, rather common, February through October.

74. *Urbanus proteus* (Linnaeus). Reported by Jones from Biloxi, Harrison Co. on 3, 11, and 21 March 1910. We have taken it in southern and central Mississippi from July through November. We have no records of its occurrence north of Hinds Co. and in some years it apparently does not get that far north. It seems to arrive in central Mississippi about the same time as *Agraulis vanillae*. Additional specific dates and localities are: *Hinds Co.*—Clinton: 14 July 1948, 1, 3, and 22 October 1950, 28 October 1951, 12 October 1952, 27, 28 September 1953, 18 October 1953, 4 November 1953, 18 November 1956, 6 October 1957; Edwards: 22 August 1957; Brownsville: 20 October 1957 (M. & E. Roshore); Jackson: 25 August 1956; Utica: 21 August 1955. *Harrison Co.*—Gulfport: 23 September 1951, 13 August 1957 (M. & E. Roshore); Biloxi: 8 August 1953. *Jackson Co.*—Moss Point: 3 October 1953. *Hancock Co.*—Bay St. Louis: 12 August 1957 (M. & E. Roshore).

75. *Achalarus lyciades* (Geyer). Apparently generally distributed over the state, often associated with, but less common than, *Epargyreus clarus*. Records are available for dates from April through October.

76. *Autoclytus cellus* (Boisduval and LeConte). Clark (1936b) reviewed the known distribution in detail, citing records from Tennessee, Kentucky, Georgia, Florida, Missouri, and Texas but not from Mississippi, Alabama, or Louisiana. This was presumably the basis for Klots' statement (1951) "apparently absent from Gulf States." We have seen *A. cellus* four times and have taken three specimens at a locality three miles southwest of Clinton, Hinds Co.; the dates were: 13 and 20 May 1951, 19 August 1951, and 3 May 1953. We took one specimen in

Riverside Park, Jackson, Hinds Co., on 11 May 1957. Mr. and Mrs. E. C. Roshore reported seeing one at Brownsville, Hinds Co., on 4 July 1957. Professor Chermock has taken it at two localities in Alabama.

77. *Thorybes bathyllus* (J. E. Smith). Generally distributed over the state, often common, March through September.

78. *Thorybes pylades* (Scudder.) Apparently generally distributed, less common than *T. bathyllus*, April through September.

79. *Thorybes confusus* Bell. We have found it difficult to distinguish specimens of *T. confusus* from those of *T. pylades*. Ten of our specimens (7 ♂♂, 3 ♀♀) were determined by C. F. dos Passos and fifteen (13 ♂♂, 2 ♀♀) by H. A. Freeman; one taken by Kilian Roever was determined by A. H. Clark; and one was listed by F. M. Jones. On the basis of the records provided by these determinations, *T. confusus* has been taken in Harrison, Pearl River, Clarke, Hinds, Benton, and Tishomingo Counties in April, May, July, and August.

80. *Pyrgus communis communis* (Grote). Generally distributed, often common, found in all months except January. In a series of 25 males and 16 females representing all months from March through November and localities in twelve counties (Franklin, Harrison, Hinds, Jackson, Jefferson, Jones, LeFlore, Panola, Stone, Walthall, Warren, and Wayne) the females all have more dark than white above, the males usually have more white than dark above; and the dark areas in the females are consistently darker (blackish brown) than the dark areas in the males (brownish gray). We see no tendency for the pattern or relative darkness in specimens of either sex to change with seasons of the year.

81. *Pyrgus syrichtus* (Fabricius). One specimen is known, a male, taken on 12 August 1957 at Bay St. Louis, Hancock Co., by Mr. and Mrs. E. C. Roshore. Klots (1951) and previous authors have stated that it occurs in southern Florida and southern Texas. Freeman (1945) reported a female taken on 10 September 1929 on the Arkansas River at North Little Rock, Arkansas. He also reported (1951c) its occurrence at Dallas, Texas in September and October. The Mississippi specimen, now in our collection, has the markings on the hind-

wing beneath almost precisely as figured by Brown (1956b: 266).

82. *Pholisora catullus* (Fabricius). Generally distributed, however in most cases only one or two specimens are found at a time; March through September. One specimen in the State College collection is labelled "23 Jun 1927, Yokena, Warren Co., ex larva from corn, O. M. Chance." It was reported by Forket (1900) from Ocean Springs, Jackson Co. Specific localities and dates include: *Oktibbeha Co.*—State College: 25 March 1907, April 1916, 26 August 1921 (F. H. Benjamin, det. A. W. Lindsey), 27 April 1950 (J. L. Horton)—all in State College collection. *Monroe Co.*—Aberdeen: 15 August 1955 (K. Roever). *Clay Co.*—West Point: 11 April 1954. *Kemper Co.*—Scooba: 27 April 1957. *Noxubee Co.*—Brooksville: 11 April 1954; Macon: 27 April 1957. *Bolivar Co.*—Pace: 27 April 1951. *Leflore Co.*—Greenwood: 30 July 1955 (John Carr). *Warren Co.*—Yokena: 23 June 1927 (O. M. Chance, State College collection); Bovina: 24 July 1955, 31 July 1955. *Hinds Co.*—Jackson: 25 August 1956, 26 April 1952, 1 September 1956, 29 May 1954, 7 April 1956; Clinton: 30 March 1951, 8 April 1951, 6 August 1953, 16 May 1954, 1 May 1955, 3 July 1955, 17 July 1954; Bolton: 1 June 1957 (M. & E. Roshore), 1 September 1957; Brownsville: 2 September 1956, 24 August 1957. *Lincoln Co.*—Brookhaven: 3 July 1954. *Harrison Co.*—Biloxi: 1910 (F. M. Jones).

83. *Pholisora bayhurstii* (Edwards). Not as common as *P. catullus*. We have records for all months from April through September; none from localities in the southern part of the state. Specific localities and dates include: *Benton Co.*—Lamar: 28 August 1955. *Calhoun Co.*—Derma: 11 September 1954. *Leflore Co.*—Greenwood: 22 June 1955. *Panola Co.*—Batesville: 5 August 1956. *Hinds Co.*—Brownsville: 24 August 1957 (M. & E. Roshore); Clinton: 4 July 1952, 4 April 1953, 2 April 1954, 4 April 1954, 17 July 1954, 16 May 1954, 5 April 1955, 14 September 1956, 13 August 1956, 1 July 1956, 12 May 1957, and 1, 2, 3, 5, 7, 9, and 23 August 1957 (M. & E. Roshore). *Warren Co.*—Bovina: 7 August 1955; Vicksburg: 15 June 1957 (M. & E. Roshore); Redwood: 4 July 1957.

84. *Erynnis brizo brizo* (Boisduval and LeConte). One specimen, in poor condition, in the State College collection, is labelled: "26 Sep. 1928, Utica, Hinds Co., F. Lewis, feeding on *Daubentonia longifolia*, det'd as *Thanaos brizo somnus* by H. G. Dyar." The specimen is not now determinable. We have taken about 40 specimens, all in February, March, or April; at localities in Alcorn, Attala, Hinds, and Tishomingo Counties. We have no records from the southern part of the state.

85. *Erynnis martialis* (Scudder). One specimen, determined by A. W. Lindsey, was taken at Longview, Oktibbeha Co. on 26-27 June 1920; it is in the State College collection. One taken by Kilian Roever in Tishomingo State Park on 20 April 1952 is now in our collection. Additional specific dates and localities include: *Tishomingo Co.*—SW of Iuka: 28-29 March 1953, 21 April 1956; Mt. Woodall: 20 April 1957; Tishomingo State Park: 21 April 1956. *Lee Co.*—Tombigbee State Park: 21 April 1957. *Jefferson Davis Co.*—Prentiss: 4 May 1952. *Hinds Co.*—Clinton: 15 March 1953, 16 May 1954, 23 June 1956. *Forrest Co.*—Hattiesburg: 4 March 1956 (B. and B. Valentine).

86. *Erynnis boratius* (Scudder and Burgess). Generally distributed through the state, February through October. It is the commonest species in this genus. We have taken about 200 specimens, more in March than in any other month.

87. *Erynnis juvenalis* (Fabricius). Probably generally distributed but not as common as *E. boratius*. February through August, except May; we have taken about 100 specimens, almost all in March and April.

88. *Erynnis baptisiae* (Forbes). All of the specimens that we have hoped would be *E. baptisiae* have turned out not to be, except for two females taken at Clinton, Hinds Co., on 8 and 9 June 1951, determined by C. F. dos Passos and E. L. Bell.

89. *Erynnis zarucco* (Lucas). Apparently generally distributed, February through October. We have taken about 70, about equally as many in the period July through September and in March and April. Its occurrence in Mississippi was mentioned by Lindsey, Bell, and Williams (1931) and by Klots (1951).

90. *Ancyloxypha numitor* (Fabricius). Apparently rather generally distributed, but not common. It is usually found near the water's edge on the bank of a stream. Specific localities and dates include: *Panola Co.*—Batesville: 5 August 1956 (sight record). *Calhoun Co.*—Calhoun City: 11 September 1954. *Oktibbeha Co.*—State College: 1891-93 (H. E. Weed, State College collection). *Clarke Co.*—Clarkco State Park: 30 April 1955. *Simpson Co.*—D'Lo: 10 October 1954. *Copiah Co.*—Crystal Springs: 2 June 1957. *Hinds Co.*—Clinton: 19 July 1953, 7 June 1956; Jackson: 2 October 1954, 17 August 1957. *Harrison Co.*—Biloxi: 21 April 1910 (F. M. Jones); Gulfport: 4 September 1940 (H. I. O'Byrne). We use the spelling *Ancyloxypha* rather than *Ancyl-oxipha* as used by Klots (1951) on the advice of Mr. Field and Mr. dos Passos.

91. *Copaeodes minima* (Edwards). Generally distributed, rather abundant, April through November. Although this is our smallest butterfly, it is not as hard to see as some others since it characteristically is found in open fields in bright sunlight and usually rests on the tops of grass stalks or flower heads.

92. *Hesperia metea metea* Scudder. Thirty-six specimens are known from Mississippi; a pair taken on 20 April 1952 by Kilian Roever at Tishomingo State Park were determined by A. H. Clark. The other 34 were taken by us on 29 March 1953, 10 April 1954, 21 April 1956, and 20 April 1957 in Tishomingo and Alcorn Counties. Two were examined by C. F. dos Passos, eight were examined by W. D. Field. They are assigned to *H. m. metea* since the white markings beneath are usually not obscure or absent as in *H. m. licinus* (Edwards) although a number of Mississippi females show a strong tendency toward *licinus*. Freeman (1948) stated that specimens from Georgia appear to be intermediate between typical *metea* from the northeastern United States and *licinus* from Texas, but that no typical *metea* were known from Texas or any of the adjoining states, and that two females from Arkansas were known that were not quite as dark and immaculate as the specimens from Texas originally described as *H. m. belfragei* by Freeman in 1944.

93. *Hesperia attalus* (Edwards). Two

specimens are known, both taken by H. I. O'Byrne: a female taken on 20 August 1940 at Carriere, Pearl River Co., and a male taken on 4 September 1940 at Gulfport, Harrison Co. Both are in the O'Byrne collection at the University of Missouri where they were examined by one of us (K. M.). The range is given by Klots (1951) as "Florida and Texas . . .", by Lindsey, Bell, and Williams (1931) as "Florida, Alabama, and Texas . . ." It was listed as expected for Louisiana by Lambremont (1954).

94. *Hylephila phyleus* (Drury). Generally distributed through the state, common, taken in all months except January and February. As noted by Klots (1951) the females vary more in darkness and lightness than do the males.

95. *Atalopedes campestris* (Boisduval). Generally distributed through the state, common, the only skipper commoner than *H. phyleus*, taken in all months except January and February.

96. *Polites verna sequoyah* H. A. Freeman. Eight taken by us were determined by Mr. H. A. Freeman who commented that they were the first he had seen from Mississippi. Twelve others were determined for us by Mr. C. F. dos Passos. These specimens were taken at localities in Hinds, Madison, Rankin, Warren, and Smith Counties in April, May, July, and August.

97. *Polites manataaquia* (Scudder). Generally distributed through the state, rather common, May through October. Taken by F. M. Jones and by us on the Gulf Coast, by us in central Mississippi and north into Calhoun Co.

98. *Polites themistocles* (Latreille). Generally distributed over the state, rather common, April through October. Taken by Jones, O'Byrne, and us on the Gulf Coast, by us in central Mississippi, and by H. E. Weed in Oktibbeha Co. Weed wrote (1926): "It is apparently absent . . . along the Gulf Coast except in Florida."

99. *Polites vibex vibex* (Geyer). Generally distributed over the state, quite common, March through October.

100. *Wallengrenia otho otho* (J. E. Smith). Generally distributed through the state, frequent, April through November. Freeman (1950) stated: "Typical *otho* oc-

curs from Florida, through Georgia, Alabama, Mississippi, Arkansas, parts of Oklahoma, and into Texas as far south as San Antonio . . . subspecies *egeremet*, characterized by its indistinct maculation and dull coloration, occurs over the most of southern Canada and in the United States west to the Rocky Mountains. It occurs rarely in the same localities as typical *otho*, especially near Dallas, Texas during June." Mr. dos Passos, after examining a series taken by us, remarked that Mississippi was the only state from which he had specimens of both forms. Mr. Freeman examined a group of our Mississippi specimens and determined some as *W. o. otho* and others as *W. o. egeremet*. The Clarks (1951) reported both forms from Virginia, noting that *W. o. otho* was first found there in 1940. Harris (1950) reported both forms from Georgia. Knudsen (1954) found both forms on the Oglethorpe University campus. Freeman (1951c), commenting on the co-occurrence of the two forms, wrote: "*Egeremet* occurs around the Dallas area as a form of *otho* instead of a subspecies, as both fly together at the same time of the year." A male taken at Biloxi, Harrison Co. on 17 August 1943 by Frederick H. Rindge and determined by him as *W. o. egeremet* is in the Los Angeles County Museum and was referred to by Martin and Truxal (1955). A series of 67 Mississippi specimens taken by us includes 38 *otho otho* (23 ♂♂, 15 ♀♀) and 29 *otho egeremet* (17 ♂♂, 12 ♀♀). The typical specimens were taken in all months April through October; the *egeremet* specimens in April, May, June, August, and September. Specimens of both forms have been taken in Hinds, Madison, Rankin, Smith, and Wilkinson Counties; *o. otho* also in Clarke, Harrison, Jackson, Jefferson, and Warren Counties; *o. egeremet* also in Forrest and Jasper Counties. The *o. otho* specimens from Mississippi correspond more closely with the description of that form and show fewer traces of a transitional tendency than the Mississippi specimens of *o. egeremet* do to the description of it. We therefore assign the Mississippi population to *W. o. otho*. We assume that the reference by Weed (1894) to *P. pontiac* was to material we would include here.

101. *Poanes zabulon* (Boisduval and LeConte). Twenty-two specimens are known

(18 ♂♂, 4 ♀♀). Three of the females were taken between 1 and 3 April, the fourth on 25 August, at Clinton, Hinds Co., the males were taken in March (2), April (8), June (2), July (2), August (2), and September (2) at localities in Hinds, Warren, and Carroll Counties.

102. *Poanes yehi* (Skinner). Twenty-seven specimens are known (18 ♂♂, 8 ♀♀, one sex not known). A light male taken by George Dorner at Vicksburg, Warren Co. is in the Barnes Collection at the U. S. National Museum and is probably the basis for the reference to Mississippi in the range of this species as given by Lindsey, Bell, and Williams (1931) and Klots (1951). One was taken at Jackson, Hinds Co. on 5 June 1938 by Lucien Harris, Jr. and is in his collection. The remaining 25 were taken at localities all relatively near the Pearl River in Hinds and Madison Counties except for three taken at Brownsville, Hinds Co., one taken at Bovina, Warren Co., near the Big Black River; and one taken at Calhoun City, Calhoun Co. near the Yalobusha River. Two of the Brownsville specimens were taken by M. & E. Roshore. There appear to be two broods, one flying at least between 30 May and 16 June, another between 22 August and 14 October. Forewing-length distribution of 23 specimens is given in Table 2.

TABLE 2. Forewing lengths for *Poanes yehi*.

Forewing length, mm.	Number of specimens			
	May - June		August - October	
	♂♂	♀♀	♂♂	♀♀
14	1			
15	1		3	
16	1		3	
17	1	1	1	2
18	2	1		
19		1		2

The Clarks (1951) referred to two quite distinct forms connected by a complete series of intergrades. In one form the hindwings beneath are cinnamon with the light spots clearly defined and conspicuous. Their figured specimen of this form is a female taken at Nashville, Tenn., on 23 August 1895. In the other form the hindwings beneath are yellow with the spots vaguely and indefinitely outlined and scarcely contrasting with the background. Their figured specimen of this form was taken at New Bohemia, Va. on 19 July 1941. They also describe a variation in the males in which the dark border is scarcely half the

usual width, the ground color is light and rather bright yellow, and the stigma are yellow with narrow black edges. Of this they figure a specimen taken at New Bohemia on 19 July 1941. The specimen figured by Klots (1951) is a male from Suffolk, Va. having a forewing pattern including the yellow stigma with narrow black edges; the hindwing beneath is yellow with indefinitely outlined spots. As indicated in the size-distribution table, the series that we have at hand includes 23 specimens (16 ♂♂, 7 ♀♀): 12 taken in May-June (9 ♂♂, 3 ♀♀), 11 taken in August-October (7 ♂♂, 4 ♀♀). Among the males, we have none with the stigmas yellow with narrow black borders. The August-October males appear to have slightly darker stigmas than those taken in May and June. The undersides of the hindwings of the May-June males are yellow (pumpkin yellow) in all but two that are only slightly darker. In four the spots are vague and fade into the background; in three they are slightly more distinct; in two they are fairly distinct—these are the two with slightly darker background. Of the seven August-October males, in three the brown of the outer margin of the hindwing beneath becomes darker and grayer outward from the zone of the spots; in the other four, the ground color does not darken outwardly from the zone of the spots. The background of these is darker than in the May-June group on the hindwing beneath. In three the spots are vague and fade into the background; in two they are slightly more distinct; and in two they are fairly distinct—these are not the two with the darker borders of the hindwing beneath. The females are darker above than the males. The three May-June females have yellowish brown hindwings beneath, the color being intermediate between that of the earlier and later males and duller than either. The spots in one are vague and fade into the background; in the other two they are slightly more distinct. Of the four August-October females, two have the hindwings beneath brown with sharply defined cream-colored spots. These are the only two of the series of 23 specimens that have spots of comparable clarity of definition and conspicuousness to those in the figure of this form given by the Clarks. The other two are only slightly browner on the hindwing

beneath than the earlier females but they have materially more distinct spots. The conclusion indicated by these data would seem to be that the later specimens tend to be darker than earlier ones and that the form with dark cinnamon hindwings beneath with clearly defined light spots is more likely to occur in females. The two most widely separated localities from which we have specimens are a little more than 130 miles apart. No geographic differences were indicated.

103. *Atrytone arogos arogos* (Boisduval and LeConte). Eighteen specimens are known (8 ♂♂, 10 ♀♀), two from Clinton, Hinds Co., the remainder from south Mississippi: *Forrest Co.* (Maxie), *Harrison Co.* (Gulfport), and *Jackson Co.* (Ocean Springs). Six were taken in August and September 1940 by H. I. O'Byrne, the remainder by us. Our first specimen, taken at Clinton, Hinds Co. on 5 June 1951, was determined as *A. arogos iowa* (Scudder) by Mr. C. F. dos Passos. A series of four taken by us on the Gulf Coast on 13 June 1952 were determined by him as *A. arogos arogos*. In 1955 a series of eight was examined by Mr. W. D. Field, compared with those in the U.S. National Museum, and determined as *A. arogos arogos*. Lambremont (1954) reported that one specimen was known from Louisiana, a male taken on 6 September 1950.

104. *Atrytone arpa* (Boisduval and LeConte). Only one occurrence is known: H. I. O'Byrne took nine specimens (5 ♂♂, 4 ♀♀) on 4 September 1940 at Gulfport, Harrison Co.; they are in the collection of the University of Missouri where they were examined by one of us (K.M.).

105. *Atrytone dion alabamiae* Lindsey. Two specimens are known, both males, one taken at Gulfport, Harrison Co. on 4 September 1940 by H. I. O'Byrne; the other taken at Burnsville, Tishomingo Co. on 28 August 1955 by us. The determination of our specimen was confirmed by Mr. W. D. Field. Two specimens from Alabama were known to Lindsey, Bell, and Williams (1931): the type, a male from Mobile Co. taken by W. C. Dukes on 25 June 1922; and a female from Chickasaw taken by Bell on 1 September 1925. Freeman (1941) reported taking three at North Little Rock, Ark. in June and July 1930. Kilian Roever

took it at Jackson, Tenn. on 12 September 1953. It was not reported by Lambremont (1954) as known from Louisiana.

106. *Atrytone palatka* (Edwards). Two specimens are known: one, a female, taken by H. E. Weed at State College, Oktibbeha Co. in June 1896, determined by F. H. Benjamin and A. W. Lindsey; the other, a male, taken by us at Moss Point, Jackson Co. on 14 June 1952, determined by C. F. dos Passos.

107. *Atrytone ruricola metacommet* (Harris). Apparently generally distributed over the state, rather common, April through October. A study of frequency of capture through the season, based on a series of 60 specimens, indicates a higher peak in late April and early May and a lower peak in early August.

108. *Atrytonopsis loammi* (Whitney). Four specimens are known, all were taken by Prof. and Mrs. Barry D. Valentine, three on 17 March 1956 eleven miles south of Hattiesburg, Forrest Co.; the fourth on 31 March 1955 at Hattiesburg. A discussion of the determination of these specimens is given under the next species.

109. *Atrytonopsis bianna* (Scudder). Four specimens are known, three from Mt. Woodall, Tishomingo Co., two taken on 21 April 1956, one by Kilian Roever, and one taken on 20 April 1957. The fourth was taken at Van Cleave, Jackson Co. on 28 March 1954. The Van Cleave specimen was studied in 1955 by Mr. William D. Field and determined as *A. bianna*, female. The four Hattiesburg specimens, listed above under *A. loammi*, were determined as such by us and were so referred to by Proctor (1957). Later in 1957 the entire series of eight was examined by Prof. R. L. Chermock who suggested the probability that they were conspecific and assignable to *A. bianna*. In October 1957, the entire series was studied by Mr. Field at the USNM. He found that the four from Hattiesburg closely resembled the series of *A. loammi* from Florida in the U. S. National Museum while the four listed here under *A. bianna* did not. The two males from Mt. Woodall have the features of typical *bianna*; the two females have traces of the spots on the hindwings beneath that suggest a trend toward *loammi*. Klots (1951) and Lindsey, Bell, and Williams (1931) indicated that

A. loammi may always be distinguished by the white, opaque spots on the hindwing beneath. Our Hattiesburg specimens have such spots well developed. The male genitalia as figured by Lindsey, Bell, and Williams (1931, plate XXIX, figs. 21, 22) do not show striking differences. The range of *A. loammi* is given as Florida and North Carolina. *A. bianna* has been reported from Georgia (Harris, 1950) and was listed as probable for Louisiana by Lambremont (1954). On the basis of current criteria it appears that these specimens are properly assigned as here indicated, but we suggest that the relations of the populations to which they have been assigned should be re-examined to confirm or disprove their specific distinctness.

110. *Oligoria maculata* (Edwards). Apparently this species occurs only along the Gulf Coast where it has been taken in April and May and in August and September by F. M. Jones, H. I. O'Byrne, R. P. Barnhart (State College collection, specimens determined by A. W. Lindsey), and by us. We have taken only two specimens: *Harrison Co.*—Gulfport: 4 May 1952; Biloxi: 8 August 1953. Mr. and Mrs. E. C. Roshore took one at Bay St. Louis, Hancock Co. on 12 August 1957.

111. *Lerema accius* (J. E. Smith). Apparently generally distributed over the state, February through November, most common in September and October.

112. *Amblyscirtes vialis* (Edwards). Fourteen specimens are known, all taken in Tishomingo Co. in March and April; one by Kilian Roever, the other thirteen by us.

113. *Amblyscirtes begon* (Scudder). Two specimens are known, both taken by us; one, a male, was taken southwest of Iuka, Tishomingo Co., on 10 April 1954, and was determined by Mr. W. D. Field; the other was taken in Tishomingo State Park on 20 April 1957.

114. *Amblyscirtes carolina* (Skinner). One specimen is known. It was taken on ironweed (*Vernonia* sp.) together with *A. texor* on 2 September 1957, west of Brownsville, Hinds Co. by Mr. and Mrs. E. C. Roshore. This occurrence appears to constitute a significant extension of the known range of the species as given by Klots (1951) as Georgia to Virginia. Har-

ris (1950) indicated that only two specimens were known from Georgia. The Mississippi specimen, now in our collection, is of the typical form as figured by Klots (1951, plate 35, fig. 12; and plate 38, fig. 2) and by the Clarks (1951, plate 30, fig. a). It has fewer spots on the forewing above than the specimen figured by the Clarks on Plate 28, fig. p or the one figured by Klots on Plate 38, fig. 2; but like that figured by Klots on Plate 38, fig. 2, it has fewer spots on the hindwing above than that figured by the Clarks in Plate 28, fig. p. The determination was confirmed by Mr. William D. Field.

115. *Amblyscirtes textor* (Huebner). Apparently rather generally distributed. A specimen from Clay Co. is in the collection of the American Museum of Natural History. We have taken specimens in Lee, Wayne, Hinds, and Madison Counties in March, April, May, July, August, and September. We have found this species in localities similar to those in which *L. portlandia portlandia* is found.

116. *Amblyscirtes alternata* (Grote and Robinson). Seven specimens are known. One taken by F. M. Jones at Biloxi, Harrison Co., on 21 March 1910, is now in our collection. Three, taken by H. I. O'Byrne at Gulfport, Harrison Co., and at Maxie, Forrest Co., in August 1940 are now at the University of Missouri. We took one at Fannin, Rankin Co., on 4 July 1956. Prof. and Mrs. Barry D. Valentine took one each on 30 and 31 March 1955 at Hattiesburg, Forrest Co. The determination of Dr. Jones' specimen was checked by Mr. dos Passos, that of ours by Mr. H. A. Freeman, and that of those taken by the Valentines by Prof. Ralph L. Chermock.

117. *Amblyscirtes belli* H. A. Freeman. One specimen is known from Mississippi, taken at Vaiden, Carroll Co., on 22 April 1956 by Kilian Roever and presented by him to us. It was determined by Mr. H. A. Freeman.

118. *Lerodea l'herminieri* (Latreille). Apparently generally distributed over the state, but not common; April through July and September through October. It was taken at State College, Oktibbeha Co., by Weed (1894), in southeast Mississippi by F. M. Jones, F. H. Benjamin, H. I. O'Byrne,

and by us; in southwest Mississippi by us.

119. *Lerodea eufala* (Edwards). Apparently generally distributed over the state and quite common; April through December.

120. *Calpodas ethlius* (Stoll). Apparently occurs throughout the state in some years. Specimens are in the State College collection from Harrison, Pike, and Oktibbeha Counties. We took two at Jackson, Hinds Co., on 22 August 1953. We reared six from larvae collected at Biloxi, Harrison Co., on 9 August 1953, that emerged on 18-21 August; and another from a larva collected at Jackson on 23 June 1956; emerged 4 July 1956. Found only near cannas (*Canna generalis*). Jung (1950) stated: "larvae may be collected in great numbers from cannas in the gardens of New Orleans."

121. *Panoquina panoquin* (Scudder). This species is known only from coastal salt marshes. Specific dates and localities are: Harrison Co.—Biloxi: 5 April 1910 (F. M. Jones). Jackson Co.—Ocean Springs: 13, June 1952, 14 June 1952, 6 October 1956 (B. J. Collins, ex coll. B. D. Valentine); Pascagoula: 14 June 1952.

122. *Panoquina ocola* (Edwards). Taken at Biloxi, Harrison Co. on 12 April 1921 by F. M. Jones. We have taken it only from July through October. We have found it most abundant along the Gulf Coast in October, but have also found it in Central Mississippi and in some years in the north. We took it at Memphis, Shelby Co., Tenn. on 24 October 1954. On 3 October 1953 we saw very large numbers at several localities in Jackson Co. Penn (1955) described a mass flight seen on the south-eastern shore of Lake Pontchartrain in Orleans Parish, La. on 15 October 1950.

B. Species of Probable or Possible Occurrence

SUPERFAMILY PAPILIONOIDEA

FAMILY SATYRIDAE

123. *Lethe eurydice appalachia* R. L. Chermock. Chermock (1948) reported finding it in numbers in Moody Swamp near Tuscaloosa, Alabama (about 40 miles from Mississippi); Roever reported finding it at Jackson, Tenn. (also about 40 miles from Mississippi). We expect that it oc-

curs in northeast Mississippi. Lambremont (1954) listed it as expected to occur in Louisiana.

FAMILY HELICONIIDAE

124. *Dryas julia delila* (Fabricius). Hutchins (1933) wrote: "Doubtful occurrence. Specimen in State College collection with no label." Lambremont (1954) reported one male from Lafayette, La. taken on 5 November 1941, in the collection of Southwestern Louisiana Institute. This locality is about 60 miles from Mississippi.

FAMILY NYMPHALIDAE

125. *Speyeria idalia* (Drury). This species was reported to occur in Arkansas (Klots, 1951).

126. *Speyeria cybele cybele* (Fabricius). Lambremont (1954) reported one male taken at Lafayette, La. on 2 October 1931, in the collection of Southwestern Louisiana Institute. H. A. Freeman (1951b) reported it as usually rather scarce in Arkansas. Roever has taken it in southwestern Tennessee. We regard it as probable for Mississippi. It was listed from Tennessee, Illinois, Arkansas, Oklahoma, but not Louisiana, by dos Passos and Grey (1947).

127. *Euphydryas phaëton phaëton* (Drury). Chermock (1951, 1953) reported its occurrence at Tuscaloosa, Ala. Roever has taken it in Perry Co. in middle Tennessee. We expect that it occurs in northeast Mississippi.

FAMILY LYCAENIDAE

128. *Strymon titus mopsus* (Huebner). Roever has taken it at Jackson, Tenn. Chermock (1953) reported it from Tuscaloosa, Ala. Freeman (1951a) reported it common in central Arkansas. Klots (1951) included "Gulf States" in his statement of its range. Lambremont (1954) listed it as expected to occur in Louisiana. We expect that it occurs in Mississippi. It is possible that the reference by Weed (1894) to "*T. acadica*" refers to this species.

129. *Strymon edwardsii* (Grote and Robinson). As noted under the discussion of *S. fulacer* (No. 39), *S. edwardsii* was included, in error, in both previous lists of Mississippi butterflies (Weed, 1894; Hutchins, 1933). Klots (1951) gave the range "... s to Georgia and Kansas." Freeman (1951a) reported it evenly distributed over Arkansas, chiefly in May. Michener and

dos Passos (1942) stated that it ranges from Ontario to Florida and thence far beyond the Mississippi River. Roever has taken it at Jackson, Tenn. We expect that it occurs in Mississippi.

130. *Strymon kingi* Klots and Clench. Klots and Clench (1952) reported a specimen taken by R. L. Chermock at Sipsey, Walker Co., Alabama (65 miles from Mississippi) on 10 July 1949.

131. *Strymon columella modesta* (Maynard). Klots (1951) gave the range of this species as "Florida n. into Gulf States."

132. *Mitoura besseli* Rawson and Ziegler. Rawson and Ziegler (1950) suggested that its range might extend throughout the range of the white cedar (*Chamaecyparis thyoides*) to southeast Mississippi. Ziegler stated that it has been found as far south as North Carolina. We were directed by Prof. James D. Ray to a stand of *C. thyoides* on Bluff Creek at Van Cleave, Jackson Co. We have visited this locality several times but we have not yet taken *M. besseli*.

133. *Incisalia irus irus* (Godart). Freeman (1951a) reported a male taken near Conway, Ark. in late March 1929 by Paul McHenry. Lambremont (1954) listed it as known from Louisiana based on the report by Skinner (1907). Chermock has taken it around Tuscaloosa, Ala. and Roever has taken it near Jackson, Tenn.

134. *Lycaena phlaeas americana* Harris. Hutchins (1933) wrote: "Doubtful occurrence. One specimen in State College collection with no label." Klots (1951) gave the range as "... s to Georgia, Gulf States, and Arkansas." Holland (1931), on the other hand, said: "Abundant everywhere, except in the Gulf States."

135. *Leptotes cassius theonius* (Lucas). Holland (1931) and Field (1940) gave "Gulf States" in their statements of the range of this species.

136. *Brephidium pseudofoea* (Morrison). Klots (1951) wrote: "Georgia, Florida, and supposedly Gulf States. There is one record from Galveston, Texas, perhaps of a stray." Holland (1931) and Field (1940) said "Gulf States." It was listed by Lambremont (1954) as expected to occur in Louisiana. Chermock found it common on Dauphin Island, Ala., within 20 miles of Mississippi.

137. *Glaucopsyche lygdamus lygdamus* (Doubleday). The late Mr. A. H. Clark wrote to us on 12 February 1951: "... the typical form of *G. lygdamus* might occur in your area. . . . In your region it should fly in early March." We understand that Hans Epstein took it near Rockford, Alabama. A male taken on 5 April 1932 at Hot Springs, Arkansas, by L. I. Hewes and determined by him is in the collection of the Los Angeles County Museum and was mentioned by Martin and Truxal (1955).

FAMILY PAPILIONIDAE

138. *Battus polydamas lucayus* (Rothschild and Jordan). Klots (1951) gave the range of this species as: "Florida, Georgia, Gulf States, southward into Mexico." It was reported from New Orleans, La. by von Reizenstein (1863).

FAMILY PIERIDAE

139. *Anteos clorinde nivifera* (Fruhstorfer). Brown (1956a) lists this species and *A. maerula lacordairei* as essentially equally to be expected in Colorado. Field (1940) reports the occurrence of *A. clorinde* in Kansas and *A. maerula* in Nebraska. Klots (1951) reported that they have essentially the same range and both occur as breeding residents in southern Texas north to Dallas. Since *A. maerula lacordairei* has been found in Mississippi, we expect that *A. clorinde nivifera* may also be found.

140. *Phoebis agarithe maxima* (Neumoegen). Lambremont (1954) cited four records from Lafayette and Orleans Parishes, La. Klots (1951) gave the range as: "Florida, Gulf Coast, Texas, s. into Mexico, strays n. to Illinois, Arkansas, and Kansas." We expect that it occurs in Mississippi.

141. *Pieris virginianensis* Edwards. Holland (1951) gave the range as "... to the northern limits of the Gulf States." Gooch and Strecker (1924) stated that specimens from Waco, Texas, where it was "rather common", were identified by W. J. Holland as *Pieris napi*. Prof. C. L. Remington wrote us that *P. virginianensis* is locally common in Tennessee. We regard it as unlikely that this species will be found in Mississippi.

SUPERFAMILY HESPERIOIDEA

FAMILY HESPERIIDAE

142. *Celotes nesus* (Edwards). Reported by Glick (1939) as having been

taken at an altitude of 20 feet, between August 1926 and October 1931, at Tallulah, Madison Parish, La. (less than 10 miles from Mississippi).

143. *Erynnis icelus* (Scudder and Burgess). Reported by Freeman (1945) from Pinnacle Springs, Faulkner Co., Ark., 7 July 1944 (two males); taken by Chermock at Tuscaloosa, Ala.; and taken by Roever near Jackson, Tenn. Roever's specimens were determined by A. H. Clark. Klots (1951) gave the range of this species as: "Quebec w. to Manitoba and Vancouver, s. to North Carolina and New Mexico but not in Great Plains, or states bordering them." Lindsey, Bell, and Williams (1931) gave the range as: "Northern United States and Canada, extending south to North Carolina in the east, and to New Mexico in the west. Apparently the species does not enter the plains region in the central United States." Macy and Shepard (1941) wrote: "... throughout the Northern United States and Canada from Nova Scotia to Florida and westward to California . . . it is found in Illinois and Indiana."

144. *Erynnis persius persius* (Scudder). Forbes (1936) reported a specimen from Eagle, Alabama. Roever has taken it at Jackson, Tenn. Freeman (1945) reported it from Faulkner Co., Ark., and (1943) gave the range as "Florida, westward to Arkansas." We expect that it occurs in Mississippi.

145. *Erynnis lucilius* (Scudder and Burgess). Klots (1951) gave the range as "... w. to North Dakota, and Nebraska, s. to Georgia." Lindsey, Bell, and Williams (1931) gave the range as: "... northeastern United States." Macy and Shepard (1941) suggested that the range may be much the same as that of the foodplant, *Aquilegia canadensis*. Although *A. canadensis* was not reported from Mississippi by Lowe (1921), Prof. James D. Ray informed us that reliable distribution records indicate its presence. He also noted that it would not be expected in abundance but should be sporadic in areas such as the river bluffs and the northeast highlands. A closely related form, *A. vulgaris*, is in cultivation as a garden ornamental.

146. *Erynnis funeralis* (Scudder and Burgess). This species was reported by Watson (Grossbeck, 1917) from Pensacola, Fla. (60 miles from Mississippi) and by

Freeman (1945) from Osage, Ark. We expect that it occurs in Mississippi.

147. *Copaodes aurantiaca* (Hewitson). Reported by Freeman (1945) from the Arkansas River at North Little Rock, Ark. (85 miles from Mississippi) in October 1931.

148. *Hesperia leonardus stallingsi* H. A. Freeman. Reported by Glick (1939) from Tallulah, Madison Parish, La. (less than 10 miles from Mississippi); by Freeman (1945) from Rogers, Ark.; taken by Chermock at Tuscaloosa, Ala.

149. *Hesperia sassacus sassacus* Harris. Taken by Roeber at Chickasaw State Park and at Jackson, Tenn. in April and May. Listed by Lambremont (1954) as expected to occur in Louisiana.

150. *Hesperia meskei* (Edwards). Reported by Freeman (1942) from North Little Rock and from Faulkner Co., Ark.; taken by Chermock at Tuscaloosa, Ala.; and listed by Lambremont (1954) as expected to occur in Louisiana.

151. *Polites peckius* (Kirby). The range of this species has been given as: "Canada to Florida and Kansas" (Field, 1940); "Maritime Provinces westward, s. to Georgia and Texas" (Klots, 1951); "Atlantic Coast to Texas and Arizona" (Lindsey, Bell, and Williams, 1931). Listed by Lambremont (1954) as expected to occur in Louisiana. Brown (1956b) gives the range as: "The Maritime Provinces of Canada south to Georgia and westward to Montana and Arizona." The species is not mentioned by Freeman (1951c) in his study of the skippers of Texas. Prof. Chermock advised us that he doubted that this species occurs in Mississippi. If it does not occur in Mississippi and Texas, there would appear to be some revisions needed in the description of its range.

152. *Poanes viator* (Edwards). Klots (1951) gave the range as: "... s. to Alabama and Texas." Holland (1931) described it as: "... not uncommon in the Gulf States." Reported by Lambremont (1954) from Norco, St. Charles Parish, La. and by Scudder (1889) from Orleans Parish, La. It was taken by Roeber in August 1955 near Mobile Bay, Ala. We expect that it occurs in Mississippi.

153. *Poanes bobomok bobomok* (Har-

ris). Taken by Roeber at Chickasaw State Park and at Jackson, Tenn.; by Chermock at Tuscaloosa and in Walker Co., Ala.; and reported by Freeman (1945) from Mt. Sequoyah, near Fayetteville, Ark. Klots (1951) gave the range as: "... s. to Georgia, Alabama, Arkansas, and Kansas."

154. *Problemia byssus* (Edwards). Range given by Klots (1951) as: "Florida to Texas and n. to Kansas and Iowa." Field (1940) gave it as: "southern United States from Florida to Texas." Remington (1955) reported it from Elsah, Illinois and wondered whether its occurrence there was discontinuous or connected to regions to the south from which it is known. Listed by Lambremont (1954) as expected to occur in Louisiana.

155. *Atrytone logan logan* (Edwards). Stated by Klots (1951) to occur in the "Gulf States." Stated by Lindsey, Bell, and Williams (1931) to occur from "Florida to Arkansas." It has been taken by Roeber at Jackson, Tenn. It was described by Freeman (1945) as common over Arkansas. A male taken at Linden, Alabama on 17 May 1930, determined by Lloyd M. Martin, is in the Los Angeles County Museum and was referred to by Martin and Truxal (1955). It was listed by Lambremont (1954) as expected to occur in Louisiana.

156. *Atrytone berryi* Bell. This species has been taken at Pensacola, Fla. (60 miles from Mississippi) by S. S. Nicolay (Chermock, 1953); it was described from Monticello, Florida in 1941.

157. *Atrytone dukesi* Lindsey. The type locality is the vicinity of Mobile Bay, Ala. Lambremont (1954) reported a male taken 11.5 miles west of Oak Grove, West Carroll Parish, La. We expect that it occurs in Mississippi.

158. *Atrytone bimacula* (Grote and Robinson). Klots (1951) stated that old records far to the south of Virginia are based on misidentifications. Kilian Roeber told us that a specimen taken at Mobile, Alabama and determined by Lindsey has recently been re-determined and confirmed.

159. *Amblyscirtes linda* H. A. Freeman. Klotz (1951) referred to this species as "of the lower Mississippi Valley." It was described from Arkansas and was reported by Freeman (1945) to have been taken at three

localities in that state. One, taken by Roever at Jackson, Tenn., was determined by Mr. dos Passos.

160. *Lerodea neamatbla* Skinner and Williams. Klots (1951) wrote: "The recent description of *julia* from Texas makes it doubtful whether old records of *neamatbla* from the Gulf States, Texas, and north to Missouri refer to it or to *julia*. Range.—Florida, probably Georgia, perhaps Gulf States and Texas." Mr. Freeman wrote to us: "I have never seen specimens of *julia* from farther north than San Marcos" (200 miles southwest of Dallas, 160 miles west of Houston, Texas). A male taken at Chickasaw, Ala. in September and determined by E. L. Bell is in the Los Angeles County Museum and was referred to by Martin and Truxal (1955).

FAMILY MEGATHYMIDAE

161. *Megathymus yuccae yuccae* (Boisduval and LeConte). This species was re-described by Freeman (1952) to include material previously known as *M. y. alabamiae* (Freeman, 1943), the type locality of which was Anniston, Alabama; from specimens from South Carolina, Georgia, Alabama, and Buffalo, Leon Co., Texas. It has been taken at Tuscaloosa, Ala. (Chermock, 1951). We expect that it occurs in Mississippi.

162. *Megathymus cofaqui* (Strecker). This species was described from Georgia. Freeman (1955) stated that it feeds on *Yucca aloifolia* which occurs in Louisiana (Brown, 1945), and also in Mississippi. Lambremont (1954) listed both *M. yuccae* and *M. cofaqui* as expected to occur in Louisiana.

163. *Megathymus harrisi* H. A. Freeman. Kilian Roever told us that in the fall of 1956 he found tubes adjacent to yucca plants in west Tennessee that were indicative of the presence of this species. Harris (1954) and Freeman (1955) note that it feeds on *Yucca filamentosa*, *Yucca filamentosa* (*sensu strictu*) may not occur in Mississippi. Brown (1957) lists *Yucca aloifolia* L., *Y. gloriosa* L., and *Y. smalliana* Fern. as native to Louisiana. In a letter, he explained that *Y. filamentosa* L. has leaves with a short, concave, rigid, partly hooded tip while *Y. smalliana* has leaves with a flat, long, attenuated apex. He finds that native Louisiana yuccas with filaments on the sides of their leaves meet the description of *Y.*

smalliana. The material we have seen in Mississippi appears to be this species also. We do not know whether *M. harrisi* feeds on *Y. smalliana* as well as on *Y. filamentosa*.

VIII. FLIGHT PERIOD

We have date and locality records for 121 of the 122 species that we have listed as known to occur in Mississippi; no specific record is known for *Phoebis philea*. Of ten species there is but a single record and a single specimen: *Phyciodes texana seminole*, *Strymon favonius*, *Incisalia augustinus croesioides*, *Lycaena thoë*, *Echinargus isola alce*, *Anteos maerula lacordairei*, *Eurema mexicana*, *Pyrgus syrichtus*, *Amblyscirtes belli*, *Amblyscirtes carolina*.

We have records of the occurrence of ten species in all months of the year: *Phyciodes tharos tharos*, *Polygonia interrogationis*, *Vanessa virginienensis*, *Precis lavinia coenia*, *Anaea andria*, *Libytheana bachmanii bachmanii*, *Colias eurytheme*, *Phoebis sennae eubule*, *Eurema nicippe*, *Pieris rapae*.

Available flight-period data for the 121 species are summarized in Table 3 by months.

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TABLE 3. Flight-period data for Mississippi butterflies.

	J	F	M	A	M	J	J	A	S	O	N	D
1. <i>L. p. portlandia</i>				X		X	X	X	X	X	X	
2. <i>L. creola</i>				X			X	X	X			
3. <i>E. c. cymela</i>			X	X	X	X	X		X			
4. <i>E. hermes sosybia</i>			X	X	X	X	X	X	X	X	X	
5. <i>E. a. areolata</i>				X		X		X	X	X		
6. <i>E. g. gemma</i>			X	X	X	X	X	X	X	X	X	
7. <i>C. p. pegula</i>							X	X	X	X		
8. <i>D. gilippus berenice</i>					X			X	X			
9. <i>D. p. plexippus</i>			X	X	X	X	X	X	X	X	X	
10. <i>H. charitonius tuckeri</i>				X								
11. <i>A. vanillae nigrrior</i>		X					X	X	X	X	X	X
12. <i>E. claudia</i>		X	X	X	X	X	X	X	X	X	X	X
13. <i>S. diana</i>									X			
14. <i>M. g. gorgone</i>				X								
15. <i>M. n. nycteis</i>				X	X	X	X	X	X			
16. <i>P. phaon</i>			X	X	X	X	X	X	X	X	X	
17. <i>P. t. tharos</i>	X	X	X	X	X	X	X	X	X	X	X	X
18. <i>P. texana seminole</i>											X	
19. <i>P. interrogationis</i>	X	X	X	X	X	X	X	X	X	X	X	X
20. <i>P. comma</i>		X	X	X	X					X	X	
21. <i>N. antiopa</i>	X	X	X	X	X					X		
22. <i>V. atalanta</i>		X	X	X	X	X	X	X	X	X	X	X
23. <i>V. cardui</i>		X	X	X	X		X	X	X	X	X	X
24. <i>V. virginiensis</i>	X	X	X	X	X	X	X	X	X	X	X	X
25. <i>P. lavinia coenia</i>	X	X	X	X	X	X	X	X	X	X	X	X
26. <i>L. arthemis astyanax</i>			X	X	X	X	X	X	X	X	X	
27. <i>L. archippus watsoni</i>				X	X	X	X	X	X	X	X	
28. <i>A. andria</i>	X	X	X	X	X	X	X	X	X	X	X	X
29. <i>A. c. clyton</i>					X	X	X	X	X	X		
30. <i>A. celtis alicia</i>				X	X	X	X	X	X	X		
31. <i>L. b. bachmanii</i>	X	X	X	X	X	X	X	X	X	X	X	X
32. <i>L. virginiensis</i>			X	X	X	X	X	X	X	X	X	
33. <i>A. h. halesus</i>		X	X	X		X			X	X	X	
34. <i>S. m-album</i>		X	X				X	X				
35. <i>S. cecrops</i>		X	X	X	X	X	X	X	X	X		
36. <i>S. m. melinus</i>		X	X	X	X	X	X	X	X	X		
37. <i>S. favonius</i>					X							
38. <i>S. o. ontario</i>				X	X							
39. <i>S. falacer</i>					X	X						
40. <i>S. lipurops strigosus</i>				X		X						
41. <i>M. g. gryneus</i>		X	X	X	X		X	X				
42. <i>I. augustinus croesioides</i>			X									
43. <i>I. henrici turneri</i>			X	X								
44. <i>I. n. niphon</i>			X	X								
45. <i>F. t. tarquinius</i>			X	X	X	X	X					
46. <i>L. thoë</i>				X								
47. <i>H. ceranrus antibubastus</i>				X						X		
48. <i>E. isola alce</i>						X						
49. <i>E. c. comyntus</i>		X	X	X	X	X	X	X	X	X	X	
50. <i>L. argiolus pseudargiolus</i>		X	X	X	X	X		X	X			
51. <i>P. polyxenes asterius</i>	X	X	X	X	X	X	X	X	X	X		
52. <i>P. c. cresphontes</i>			X	X	X	X	X	X	X			
53. <i>P. g. glaucus</i>			X	X	X	X	X	X	X	X		
54. <i>P. troilus ilioneus</i>		X	X	X	X	X	X	X	X	X		
55. <i>P. p. palamedes</i>			X	X	X	X	X	X	X	X		
56. <i>G. m. marcellus</i>		X	X	X	X	X	X	X				
57. <i>B. philenor</i>		X	X	X	X	X	X	X	X	X		
58. <i>A. genutia</i>			X	X								
59. <i>C. carytheme</i>	X	X	X	X	X	X	X	X	X	X	X	X
60. <i>C. philodice</i>	X		X		X			X		X		
61. <i>Z. resonia</i>	X		X	X	X	X	X	X	X	X		X
62. <i>A. macrula lacordairei</i>								X				
63. <i>P. sennae cubule</i>	X	X	X	X	X	X	X	X	X	X	X	X
64. <i>P. phileu</i>												
65. <i>E. d. daira</i>		X	X	X	X	X	X	X	X	X	X	X
66. <i>E. mexicana</i>									X			

TABLE 3. — Continued. *Flight-period data for Mississippi butterflies.*

	<i>J</i>	<i>F</i>	<i>M</i>	<i>A</i>	<i>M</i>	<i>J</i>	<i>J</i>	<i>A</i>	<i>S</i>	<i>O</i>	<i>N</i>	<i>D</i>
67. <i>E. nicippe</i>	x	x	x	x	x	x	x	x	x	x	x	x
68. <i>E. l. lisa</i>	x				x	x	x	x	x	x	x	x
69. <i>N. iole</i>						x	x	x	x	x	x	
70. <i>P. rapae</i>	x	x	x	x	x	x	x	x	x	x	x	x
71. <i>P. p. protodice</i>		x	x	x	x	x	x	x	x	x	x	x
72. <i>A. monuste phileta</i>					x	x	x	x		x		
73. <i>E. c. clarus</i>		x	x	x	x	x	x	x	x	x		
74. <i>U. proteus</i>			x				x	x	x	x	x	
75. <i>A. lyciades</i>				x	x	x	x	x	x	x		
76. <i>A. cellus</i>					x		x	x				
77. <i>T. bathyllus</i>			x	x	x	x	x	x	x			
78. <i>T. pylades</i>				x	x	x	x	x	x			
79. <i>T. confusus</i>				x	x		x	x				
80. <i>P. c. communis</i>		x	x	x	x	x	x	x	x	x	x	x
81. <i>P. syrichtus</i>								x				
82. <i>P. catullus</i>			x	x	x	x	x	x	x			
83. <i>P. hayhurstii</i>				x	x	x	x	x	x			
84. <i>E. b. brizo</i>		x	x	x					x			
85. <i>E. martialis</i>			x	x	x	x						
86. <i>E. horatius</i>		x	x	x	x	x	x	x	x	x		
87. <i>E. juvenalis</i>		x	x	x		x	x	x				
88. <i>E. baptisiae</i>						x						
89. <i>E. zarucco</i>		x	x	x	x	x	x	x	x	x		
90. <i>A. numitor</i>				x		x	x	x	x	x		
91. <i>C. minima</i>				x	x	x	x	x	x	x	x	
92. <i>H. m. metea</i>			x	x								
93. <i>H. attalus</i>								x	x			
94. <i>H. phyleus</i>			x	x	x	x	x	x	x	x	x	x
95. <i>A. campestris</i>			x	x	x	x	x	x	x	x	x	x
96. <i>P. verna sequoyah</i>				x	x		x	x				
97. <i>P. manataaquia</i>					x	x	x	x	x	x		
98. <i>P. themistocles</i>				x	x	x	x	x	x	x		
99. <i>P. v. vibex</i>			x	x	x	x	x	x	x	x		
100. <i>W. o. otho</i>				x	x	x	x	x	x	x	x	
101. <i>P. zabulon</i>			x	x		x	x	x	x			
102. <i>P. yehl</i>					x	x		x	x	x		
103. <i>A. a. arogos</i>						x		x	x			
104. <i>A. arpa</i>									x			
105. <i>A. dion alabamac</i>								x	x			
106. <i>A. palatka</i>						x						
107. <i>A. ruricola metacomet</i>				x	x	x	x	x	x	x		
108. <i>A. loammi</i>			x									
109. <i>A. hianna</i>			x	x								
110. <i>O. maculata</i>				x	x			x	x			
111. <i>L. accius</i>		x	x	x	x	x	x	x	x	x	x	
112. <i>A. vialis</i>			x	x								
113. <i>A. hegon</i>				x								
114. <i>A. carolina</i>									x			
115. <i>A. textor</i>			x	x	x		x	x	x			
116. <i>A. alternata</i>			x				x	x				
117. <i>A. belli</i>				x								
118. <i>L. l'herminieri</i>				x	x	x	x	x	x	x		
119. <i>L. eufala</i>				x	x	x	x	x	x	x	x	x
120. <i>C. ethlius</i>					x		x	x				
121. <i>P. panoquin</i>				x		x				x		
122. <i>P. ocola</i>				x			x	x	x	x		

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ABSTRACT

Published and unpublished previous work by H. E. Weed beginning in 1891, F. M. Jones, R. E. Hutchins, H. I. O'Byrne, and others is reviewed. Previous lists published by Weed (1894) and Hutchins (1933) recorded the occurrence of 77 species. The annotated list summarizes all available data on the known, probable or possible occurrence of 163 species. Records of the following 45 species, not included in either of the two previously published lists, are given: *Lethe creola*, *Euptychia areolata*, *Danaus gilippus berenice*, *Heliconius charitonius*, *Speyeria diana*, *Melitaea gorgone*, *M. nycteis*, *Phyciodes texana seminole*, *Strymon m-album*, *S. favonius*, *S. ontario*, *Ineisaia angustinus*, *I. nippon*, *Fenisea*, *tarquinius*, *Lycaena thoë*, *Hemiargus ceraunus antitubastus*, *Echinargus isola*, *Anteos maerula lacordairei*, *Eurema mexicana*, *Autoclytus cellus*, *Thorybes confusus*, *Pyrgus syrichtus*, *Pholisora hayhurstii*, *Erynnis baptisiae*, *E. zarucco*, *Copaodes minima*, *Hesperia metea*, *H. attalus*, *Polites verna sequoyah*, *Poanes zabulon*, *P. yehl*, *Atrytone arogos*, *A. arpa*, *A. dion alabamiae*, *A. palatka*, *A. ruricola metacometa*, *Atrytonopsis loami*, *A. hianna*, *Amblyscirtes vialis*, *A. hegon*, *A. carolina*, *A. textor*, *A. alternata*, *A. belli*, and *Panoquina panoquin*. Records of occurrence at 189 localities (shown on maps) representing all of Mississippi's 82 counties are abstracted. Flight-period data by months are given for each of the 122 species listed as known from Mississippi. Of ten species, there is but a single Mississippi record and specimen: *P. texana seminole*, *S. favonius*, *I. angustinus*, *L. thoë*, *E. isola*, *A. maerula*, *E. mexicana*, *P. syrichtus*, *A. carolina*, and *A. belli*. Of ten other species, records are available of the occurrence of adults in Mississippi in all months of the year: *Phyciodes tharos*, *Polygonia interrogationis*, *Vanessa virginiana*, *Preis lavinia cenia*, *Anaea andria*, *Lyhytheana buchmanii*, *Colias eurytheme*, *Phoebis senecae eubule*, *Eurema nicippe*, and *Pieris rapae*. Reasons are given for believing that 41 other species are of probable or possible occurrence in Mississippi. Comparisons are made with lists for other states and regions.

