1936

Phalaenidae of Mississippi: morphology of the genitalia

Ross Elliott Hutchins

Iowa State College

Follow this and additional works at: http://lib.dr.iastate.edu/rtd

Part of the Entomology Commons

Recommended Citation
Hutchins, Ross Elliott, "Phalaenidae of Mississippi: morphology of the genitalia" (1936). Retrospective Theses and Dissertations. 13985.
http://lib.dr.iastate.edu/rtd/13985

This Dissertation is brought to you for free and open access by Iowa State University Digital Repository. It has been accepted for inclusion in Retrospective Theses and Dissertations by an authorized administrator of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.
NOTE TO USERS

This reproduction is the best copy available.

UMI®
PHALAEILAE OF MISSISSIPPI -
MORPHOLOGY OF THE GENITALIA

-by-

Ross Elliott Hutchins

A Thesis Submitted to the Graduate Faculty for the Degree of

DOCTOR OF PHILOSOPHY

Major Subject: Entomology

Approved:

Signature was redacted for privacy.

In charge of Major work

Signature was redacted for privacy.

Head of Major Department

Signature was redacted for privacy.

Dean of Graduate College

Iowa State College
1936
INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.
# CONTENTS

| Introduction | 7 |
| HISTORICAL CONSIDERATIONS | 8 |
| METHODS | 9 |
| MALE GENITALIA OF THE PHALANGIDAE | 11 |
| DESCRIPTIONS OF THE GENITALIA OF MISSISSIPPI |
| PHALANGIDAE ARRANGED BY GENERA | 14 |

**Genera**

- *Heliotheria* | 15
- *Rhoeadina* | 15
- *Lycharseia* | 17
- *Sabinia* | 19
- *Feltia* | 21
- *Acanthia* | 25
- *Epipala* | 24
- *Lycophila* | 27
- *Futa* | 29
- *Epipyra* | 31
- *Nephalodes* | 31
- *Nephracma* | 32
- *Orthosia* | 33
- *Xanthopastia* | 33
- *Cyphina* | 34
- *Bormoria* | 34
<table>
<thead>
<tr>
<th>Term</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nolceania</td>
<td>37</td>
</tr>
<tr>
<td>Cucullia</td>
<td>37</td>
</tr>
<tr>
<td>Pseudidae</td>
<td>38</td>
</tr>
<tr>
<td>Entolype</td>
<td>39</td>
</tr>
<tr>
<td>Censtra</td>
<td>59</td>
</tr>
<tr>
<td>Amphipora</td>
<td>40</td>
</tr>
<tr>
<td>Dipterreta</td>
<td>40</td>
</tr>
<tr>
<td>Trachee</td>
<td>41</td>
</tr>
<tr>
<td>Perigae</td>
<td>43</td>
</tr>
<tr>
<td>Imperia</td>
<td>45</td>
</tr>
<tr>
<td>Callonistria</td>
<td>46</td>
</tr>
<tr>
<td>Ambergia</td>
<td>47</td>
</tr>
<tr>
<td>Chrytionix</td>
<td>47</td>
</tr>
<tr>
<td>Harrisimea</td>
<td>48</td>
</tr>
<tr>
<td>Polycrassa</td>
<td>48</td>
</tr>
<tr>
<td>Lenscora</td>
<td>49</td>
</tr>
<tr>
<td>Acronyta</td>
<td>49</td>
</tr>
<tr>
<td>Delta</td>
<td>59</td>
</tr>
<tr>
<td>Catabena</td>
<td>59</td>
</tr>
<tr>
<td>Proteana</td>
<td>60</td>
</tr>
<tr>
<td>Lampyrea</td>
<td>62</td>
</tr>
<tr>
<td>Carytrina</td>
<td>62</td>
</tr>
<tr>
<td>Calcule</td>
<td>65</td>
</tr>
<tr>
<td>Cremostes</td>
<td>64</td>
</tr>
<tr>
<td>Platygyna</td>
<td>65</td>
</tr>
<tr>
<td>Nymodes</td>
<td>66</td>
</tr>
<tr>
<td>Aphanza</td>
<td>67</td>
</tr>
<tr>
<td>Genus</td>
<td>Page</td>
</tr>
<tr>
<td>-----------------</td>
<td>------</td>
</tr>
<tr>
<td>Achatodes</td>
<td>66</td>
</tr>
<tr>
<td>Baytopsia</td>
<td>68</td>
</tr>
<tr>
<td>Caltopsia</td>
<td>69</td>
</tr>
<tr>
<td>Ctenoides</td>
<td>70</td>
</tr>
<tr>
<td>Cytopsia</td>
<td>70</td>
</tr>
<tr>
<td>Stirioidea</td>
<td>71</td>
</tr>
<tr>
<td>Stiriodes</td>
<td>71</td>
</tr>
<tr>
<td>Stigmacinerea</td>
<td>72</td>
</tr>
<tr>
<td>Amphilea</td>
<td>72</td>
</tr>
<tr>
<td>Arthisanotia</td>
<td>73</td>
</tr>
<tr>
<td>Cardisia</td>
<td>74</td>
</tr>
<tr>
<td>Phacodisia</td>
<td>75</td>
</tr>
<tr>
<td>Amyma</td>
<td>75</td>
</tr>
<tr>
<td>Cepumria</td>
<td>76</td>
</tr>
<tr>
<td>Lithococcia</td>
<td>76</td>
</tr>
<tr>
<td>Xanthopterae</td>
<td>79</td>
</tr>
<tr>
<td>Coryphia</td>
<td>79</td>
</tr>
<tr>
<td>Halocentia</td>
<td>80</td>
</tr>
<tr>
<td>Hyalactea</td>
<td>81</td>
</tr>
<tr>
<td>Tenebroidia</td>
<td>82</td>
</tr>
<tr>
<td>Thrachea</td>
<td>84</td>
</tr>
<tr>
<td>Marthysea</td>
<td>85</td>
</tr>
<tr>
<td>Peaster</td>
<td>86</td>
</tr>
<tr>
<td>Baileya</td>
<td>87</td>
</tr>
<tr>
<td>Catocala</td>
<td>88</td>
</tr>
<tr>
<td>Allatia</td>
<td>96</td>
</tr>
<tr>
<td>Taxon</td>
<td>Page</td>
</tr>
<tr>
<td>---------------</td>
<td>------</td>
</tr>
<tr>
<td>Caemurgia</td>
<td>98</td>
</tr>
<tr>
<td>Pelamia</td>
<td>98</td>
</tr>
<tr>
<td>Phurye</td>
<td>99</td>
</tr>
<tr>
<td>Caliptera</td>
<td>99</td>
</tr>
<tr>
<td>Apyrostratis</td>
<td>100</td>
</tr>
<tr>
<td>Zala</td>
<td>101</td>
</tr>
<tr>
<td>Naticures</td>
<td>104</td>
</tr>
<tr>
<td>Characera</td>
<td>104</td>
</tr>
<tr>
<td>Autographa</td>
<td>105</td>
</tr>
<tr>
<td>Plussia</td>
<td>110</td>
</tr>
<tr>
<td>Raphia</td>
<td>110</td>
</tr>
<tr>
<td>Malipotia</td>
<td>111</td>
</tr>
<tr>
<td>Phoberia</td>
<td>112</td>
</tr>
<tr>
<td>Panoppoda</td>
<td>113</td>
</tr>
<tr>
<td>Anticarina</td>
<td>114</td>
</tr>
<tr>
<td>Litoprespus</td>
<td>115</td>
</tr>
<tr>
<td>Strenoloma</td>
<td>115</td>
</tr>
<tr>
<td>Bendiis</td>
<td>116</td>
</tr>
<tr>
<td>Erebus</td>
<td>117</td>
</tr>
<tr>
<td>Noropcis</td>
<td>118</td>
</tr>
<tr>
<td>Plustiodonts</td>
<td>119</td>
</tr>
<tr>
<td>Alabama</td>
<td>119</td>
</tr>
<tr>
<td>Anicina</td>
<td>120</td>
</tr>
<tr>
<td>Secleopera</td>
<td>121</td>
</tr>
<tr>
<td>Rivila</td>
<td>122</td>
</tr>
<tr>
<td>Phinopera</td>
<td>122</td>
</tr>
<tr>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Pleonectyta</td>
<td>125</td>
</tr>
<tr>
<td>Phytoctytra</td>
<td>124</td>
</tr>
<tr>
<td>Phalaenostola</td>
<td>124</td>
</tr>
<tr>
<td>Mallistra</td>
<td>125</td>
</tr>
<tr>
<td>Equisetia</td>
<td>126</td>
</tr>
<tr>
<td>Hernia</td>
<td>127</td>
</tr>
<tr>
<td>Tetanolita</td>
<td>127</td>
</tr>
<tr>
<td>Falthis</td>
<td>128</td>
</tr>
<tr>
<td>Deyastis</td>
<td>128</td>
</tr>
<tr>
<td>Salis</td>
<td>129</td>
</tr>
<tr>
<td>Bamberoha</td>
<td>129</td>
</tr>
<tr>
<td>Plathyrrhosa</td>
<td>130</td>
</tr>
<tr>
<td>Bibliography</td>
<td>132</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>135</td>
</tr>
<tr>
<td>Explanation of Plates</td>
<td>136</td>
</tr>
<tr>
<td>Plates</td>
<td>146 to 167</td>
</tr>
<tr>
<td>Vita</td>
<td>158</td>
</tr>
</tbody>
</table>
INTRODUCTION

Since the contributions of J. B. Smith toward a monograph of American Phalaenidae (Noctuidae) in 1890 there have been no additions to a systematic survey of these moths based on the male genitalia. J. B. Smith's figures are rather inaccurate due to his method of simply breaking off the claspers and figuring whatever came off. In few cases does he show the structure of the tegumen ring, penisulus or uncus.

The object in the present study has been to follow as closely as is practicable the methods of Pierce as exemplified in his excellent work on British Noctuidae. In other words the object has been to describe in detail the male genitalia of all the species found within the borders of Mississippi and to illustrate these descriptions with drawings. It is hoped that with the aid of the present work it will be possible to determine the Mississippi species by a study of their genitalia.

It is very difficult to distinguish the species of moths by figures and descriptions of the gross structure because in many cases the distinction between species is obscure. A study of the male genital apparatus offers a solution to the problem because it is easily portrayed and at the same time shows great variation even in genera containing closely related species.

This is the result of an investigation which has extended over a period of more than six years. Light traps have been operated both at State College and on the Gulf Coast and it is thought that but few additional species remain to be recorded except, perhaps, in the Coast area.
This area lies in what may almost be termed a sub-tropical climate and for this reason its fauna and flora are very distinct from that found over the remainder of the state.

HISTORICAL CONSIDERATIONS

The literature of the Phalaenidae contains few references to Mississippi species. H. E. Weed made numerous collections in North Mississippi during the early 1890's. The late F. H. Benjamin made a rather complete collection of these moths both from the vicinity of State College and from the Gulf Coast region. Most of the material collected by Mr. Benjamin was compared with specimens in the Barnes Collection. This excellent collection has been at the writer's disposal and has proved very helpful, indeed, several of the genitalia mounts were made from specimens collected by Mr. Benjamin.

This, besides a few scattered references, composes the history of Phalaenid studies in the state.

The genitalia of Lepidoptera have been studied by numerous biologists for several hundred years. In 1669 Malpighi described briefly the genitalia of Bombyx mori. Swammerdam made elementary studies of the male genitalia of the European butterfly, Vanessa urticae in 1737. Reama discussed the physiology of the reproductive system in 1748. The first detailed attempts at describing the genitalia were made by Burmeister in 1832, Kirby and Spence in 1838, and by Siebold and Stainton in 1848. The term valves was used to designate the two lateral appendages. The first extended survey of the male genitalia of Lepidoptera was made by Buchanan-White in 1876,
worker problems and their solutions.

In 1971, the American Society for Industrial Engineering (ASIE) conducted a study of the problem of worker productivity. It was found that workers were able to work more efficiently when they were provided with a comfortable and supportive work environment. This led to increased productivity and higher job satisfaction.

In 1973, the American Psychological Association (APA) published a report on the effects of environmental factors on productivity. The report concluded that workers were more productive when they had access to natural light, adequate ventilation, and a pleasant temperature. These findings were later corroborated by other studies.

Since the early 1970s, the field of ergonomics has been expanding rapidly, with the goal of improving the working conditions for workers. This has led to the development of new technologies and methods for improving productivity and reducing ergonomic hazards.

In recent years, there has been a growing interest in the use of virtual reality and augmented reality to improve the working environment. These technologies have the potential to significantly improve productivity and reduce ergonomic hazards.
frosted light bulb, and the entire apparatus was protected from rain by a sheet-metal shield.

During the summer of 1930 a careful record was kept of all Phalaenid moths captured at the trap, both as to species and sex. During this time 2257 specimens were captured of which 61.6% were males. This appears to be approximately the same percentage as has been reported by other workers. This, of course, is not to be taken as any indication of the sex ratio in nature because there is little doubt that more males are attracted to light than females.

In studying the male genitalia of the moths, mounts were made as follows: The apical portion of the abdomen was cut off and placed in a 10% solution of Potassium hydroxide and boiled for several minutes. It was then removed to a 10% Hydrochloric acid solution and the genital structure dissected out. It was then washed in water, placed on a slide and covered with a drop of Buxton's mixture. This material consists of:

- Water ......................... 50 cc.
- Glycerine ...................... 20 cc.
- Gum Arabic ..................... 40 g.
- Chlortal hydrate ............... 50 g.

The cocaine, sometimes added to Buxton's mixture, was omitted since it was unnecessary in this work. After being properly arranged the genital apparatus was covered with a cover slip in the usual manner. This technique is extremely simple and very satisfactory.

The drawings were made with the aid of a camera-lucida to increase the accuracy.
THE MAKE ORGANIZATION OF THE PHARMAcIST

-11-
and reserve the term HARPE for the inner armature. This is the terminology followed in the present work and by almost all modern lepidopterists. The term HARPE is applied in the present work to a process arising from the inner surface of the clasper. This is in agreement with the recent generic revision of the agrotid moths by Dr. J. McDannough. The shape of the clasper is extremely variable. It may be expanded and rounded as in *Amblyrrha pyromeloides* Gn., or it may be slender as in *Heliathis virens* Fabr. From its apex may extend a slender process as in *Empisca litophore* Ort. There is often a process of variable length from the ventral margin near the apex termed the POLLEX by Pierce, McDannough and others. The pollex may be represented, in some cases, by a stout spine. From the inner surface of the clasper near the apex often arises a process - the AMPULLA. This organ may be stout and finger-like or long and curving. It is present in only a small percentage of the Phalaenidae studied. Near the base of the clasper arises an extremely variable process - HARPE. This structure may be absent or greatly developed. From the basal portion of the clasper extends a thickened area - the SACculus. It may cover the entire base of the clasper or only the ventral margin. In some cases its apex may be extended and slender. In several instances it is equal to the clasper in size, but in many cases it is only slightly developed. Near the base just below the costal margin is an area rather than a definite structure called the EDITUM. In many cases it is obsolete or absent, in others it consists of a spiny area, while in a few instances it is greatly produced. From the inner base of the clasper or from a similar position on the sacculus arises, in many cases, a finger-like process termed the CLAVUS. It is an extremely variable organ, being a denticulate structure as in *Calcula*.
partita Ga., or a slender, non-denticulate process as in *Autographe ga*
Ga. Often it is entirely absent. In many cases it is difficult to see
and, too, it is often broken off during dissection. It is usually spin-
ate or setigerous especially at the apex.

Dorsad to the base of the clasper is a rounded structure - the PENI-
CLUS. The peniculus is a lateral enlargement of the tegumen and is often
considerably developed. In almost all cases it is clothed with long hair,
but sometimes it is devoid of pubescence. To the top of the tegumen is
attached a curved or hooked process termed the UNCUS. It has been suppos-
ed that this organ acts as a guide for the female organs during copulation.
This may be true, but it seems more likely from a close study of its struc-
ture that its function is to aid the claspers in grasping the female geni-
talia. In some instances the uncus may be extremely reduced.

Ventrad to the uncus is a lip-like organ - the SCAPHIUM. It is presen-
t in a considerable number of the Phalaenidae, but its function seems
obscure. In most cases it is weakly sclerotized and of little taxonomic
importance. In some instances it is clothed with setae or hair. When it
is present the uncus is described as being mandibulate.

Slightly above or between the bases of the claspers is a plate or
sclerite of extremely variable shape termed the JUXTA.

The general and chief function of the complicated external male geni-
talia of lepidoptera is to grasp the female organs and thus bring about
copulation and fertilization. Just why all the varied structures are nece-
sary is rather obscure. Of course it is easy to understand that the
claspers have a grasping function, but it is more difficult to comprehend
the use of such organs as the editum, elevus, peniculus and pollux. It
appears to the writer that these appendages or organs may act as safe-
guards against cross fertilization. It is his contention that there are
certain sensitive areas in the female which are stimulated by pressure
from these structures so as to allow copulation. Thus they act as keys
which allow fertilization only of females of the proper species. Otherwise
why would moths of more or less similar general structure have such ex-
tremely varied genital armature?

DESCRIPTIONS OF THE GENITALIA OF MISSISSIPPI PHALAENIDAE
ARRANGED BY GENERA

The order of arrangement followed in this survey is that of the Barnes
and McDunnough Check List. While the present work deals chiefly with the
morphology of the genital structures, it is actually a monograph of the
species found within the borders of Mississippi. Therefore all available
data relating to host plants and collection records are included. These
records have been gleaned from various sources, chief among which are the
files and collections of the State Plant Board of Mississippi, the collect-
tion of the late F. H. Benjamin, material collected by Mr. H. E. Weed and
from the author's files and collection. The Plant Board files extend from
about 1907 to the present time. The author's files cover the period from
September 1929 to the present, while Benjamin collected Phalaenidae during
the 1920's. A few specimens were collected as early as 1890 by H. E. Weed.

Up to the present time 108 genera and 182 species and forms have been
recorded from within the borders of the state.
HELIOTHIS CHLOROPHA Hübner (Plate II, 1a)

Syn. lupa Grote

The genital structure in this species is very similar to that in  Heliothis virescens  Fabr. In  Heliothis chloropha  Hbn., the clasper is slightly more curved, the apex is more acute, and the spines composing the corona are set closer together. The clasper is a little shorter in this species.

LOCALITY RECORDS:

Only one specimen has been taken at State College. This was captured at the light trap on September 24.

HELIOTHIS OBSCOLETA Fabricius (Plate II, 1b)

Syn. armigera Hübner

Similar in general structure to the genital apparatus of  Heliothis virescens  Fabr. The clasper is broader and not as acute. It is but little curved and there are few, if any, marginal spines. Base of tegumen rounded.

Clasper 5.5 mm.

LOCALITY RECORDS:

This species is commonly known as the corn ear-worm, cotton boll-worm and tomato fruit-worm. It is common in all sections of Mississippi, and the moth is abundant from April until October.

HOST PLANTS:

It is a common pest on tomatoes, corn, cotton and has been recorded from a few other plants.
HELIOTHIS VIRESCENS Fabricius (Plate II, 1)

Syn. rharina Smith & Abbot, spectans Stroeker

Clasper slender, apical portion slightly broader and incurved, apex rounded; ventral and distal costal margins set with long, stout spines; corona a staggered row of stout, recurved spines; sacculus weak, costal margin spinate; harpe absent; editum and clavus absent. Base of tegumen curving, apex acute. Juxta ovate. Peniculus strong, rounded, hairy. Uncus stout, sharply curved at base, spinate, apex hooked.

Clasper 5.25 mm.

This species is very similar to Sebinia trifasci Hbn. in general size and coloration. They may, however, be separated by the fact that the latter species has a harpe.

LOCALITY RECORDS:

This species is moderately common at the State College light trap during April, May and June.

RHODOPHORA GAURAE Abott & Smith (Plate II, 2)

Syn. matutina Hübner

Clasper simple, constricted near base, expanded beyond constriction, ventral margin curving, costal margin nearly straight, margin surrounded by long marginal spines; corona absent; sacculus strong, spinate; harpe arising at constriction of clasper, short, stout, setigerous, not reaching costal margin; editum obsolete; clavus absent. Base of tegumen triangular, apex acute. Peniculus produced and rounded near center, hairy. Uncus gently curving, setigerous, apex hooked.
Clasper 3 mm.

LOCALITY RECORDS:

This moth is rather common at the State College light trap from late June until October. It appears most abundant during the latter half of August.

GENUS LYORANTHOXIA Grote & Robinson

This genus is represented in Mississippi by four species, namely: L. thesaraui G. & R., L. marginata Haw., L. rufimeda Grt., and L. meskeana Grt. The entire genital structure is illustrated only in the case of L. meskeana Grt.; the rest are represented by drawings of the harpes and uncus spicis. Beyond the differences indicated by these drawings the genitalia of the four species are very similar, except for size.

Clasper long, slender, margins sub-parallel, costal margin more highly sclerotized than ventral; strong marginal spines especially along ventral margin; corona of strong, irregularly placed spines; sacculus strong, set with spines near costal margin. The harpes of the four species are slightly different. The harpe of L. meskeana Grt. is slender, reaching past the costal margin. In the other three species the harpes are short, conical, spinate, with their spicis obtuse. Clavus and edutum are absent.

The uncus in L. meskeana Grt. is curved, apex slightly enlarged, and hooked, in this respect it is similar to L. rufimida Grt. The uncus in L. marginata Haw. and L. thesaraui G. & R. is tapered to a point, slightly more hooked in the former species than the latter. The base of the tegumen is pointed apically in all four species.
Claspers: *L. meskeana* Grt. 3.5 mm., *L. thoreau* G. & R. 3.5 mm.,
*L. marginata* Haw. 3.5 mm., *L. rufimedia* Grt. 2 mm.

**LOCALITY RECORDS:**

*L. rufimedia* Grt. This species is never common. During the summer of 1930 a light trap was operated at State College almost every night and a careful record made of each Phalaenid captured. During this time only 15 specimens were noted, and these between June 15 and August 3. It has also been taken at Wiggins on June 19.

*L. meskeana* Grt. This species is rather common at State College during late April, May and June. A few specimens have been taken later than this.

*L. marginata* Haw. This is a rather common species at State College. In the summer of 1930 there were 37 males and 20 females collected at a light trap during the short period from August 31 to September 8. It has also been reported from Gano and Ocean Springs.

*L. thoreau* Grt. This is not a common species. It appears from late August until the last of September.

*L. thoreau* Grote & Robinson (Plate II, 3 b)
*L. marginata* Haworth (Plate II, 3 a)

*Syn. rivicola* Guenée, *designata* Walker

*L. rufimedia* Grote (Plate II, 3 c)

H.G. Dyer makes this species a synonym under Grote's *meskeana*. This is without doubt erroneous since these are distinct species.

*L. meskeana* Grote (Plate II, 3)

*Syn. fastidiosa* Streeker
SCHINIA TRIFASCIA Hübner (Plate II, 4)

Syn. limesta Walker

Glasper long, slender, narrower in the center, a varying number of marginal spines and an irregular corona of strongly recurved spines; harpe near base of glasper short, blunt and with spicate apex; elavus rounded and beset with setae. Umsus curved, hooked at tip and sparsely covered with setae. Peniculus clothed with short hair.

Glasper 3.75 mm.

LOCALITY RECORDS:

Several specimens taken at State College and Cedar Bluff. The dates of collection are August 10 and September 5.

SCHINIA GRACILENTA Hübner (Plate II, 5)

Very similar to the above except that in this species the setae on the umsus are longer near the base.

Glasper 3.5 mm.

LOCALITY RECORDS:

Three specimens collected at State College during August 12, September 1 and 16.

SCHINIA MUNDINA Drury (Plate II, 6)

Syn. nigripennis Haworth

Glasper slender, margins sub-parallel, gently incurved, margins with several long spines; corona of stout, strongly recurved spines; harpe short,
conical, spinate, weak; editum and clavus obsolete. Base of tegumen
triangular, apex acute. Penisculus rounded, spinate. Ureus curved, thick-
ly spinate, apex hooked.

Glasper 3.5 mm.

LOCALITY RECORDS:

Common at State College during late August and early September.

SCHINIA ARCIGERA Guenée (Plate II, 7)

Syn. apraguei Grote

Glasper long, slender, narrower near apex, outer margin with spines
of various lengths; inner surface rugose, beset with setae, more heavily
sclerotized than outer part; corona of strongly recurved spines irregular-
ly placed near apex; harpe in the basal one third, hardly as long as broad-
th of glasper in widest portion, incurved tip spatulate, beset with spinul-
es; clavus not produced. Penisculus with short setae. Ureus straight,
curved at the base, hooked at apex, clothed with setae.

Glasper 2.5 mm.

LOCALITY RECORDS:

H. E. Weed collected this species at State College as early as 1896.
It is moderately common here during August, September and early October.
FELTIA GLADIARIA Morrison (Plate II, 8)

Syn. morrissoniana Riley

Clasper with margins sub-parallel, apex rounded, marginal spines and hairs, apical portion clothed with numerous weak spines, corona a row of recurved spines along apical margin; sacculus strong, terminated by the harpe; harpe arising near ventral margin, base broad, apical portion stout, exserted near center, apex beaked with apex insurved; clavus and editum absent. Base of tegumen rounded, apex bearing a small process. Juxta cordate. Penisculus strong, produced, hairy. Ussus stout, enlarged near base, apex symnate, spinate.

Clasper 2.75 mm.

LOCALITY RECORDS:

This species has been recorded from Deasville, Durant, Kelly Springs, Kosciusko and State College during April and October. The April records are probably for the larvae. An adult was collected at State College on February 1, 1930.

HOST PLANTS:

This species is commonly known as the clay-backed cutworm. In Mississippi it has been recorded from tomatoes, onions and other garden crops.

FELTIA DUCHESS Walker (Plate II, 9)

Syn. radiata Harris

Clasper long, curved beyond the base, sides sub-parallel, a variable number of marginal spines; corona of strong spines arranged in a straight
row; harpe moderately sigmoid in shape, incurved, rounded at apex, attached to the distal end of saeculus; clavus produced and spinose. Uncus gently sigmoid, armed with spines and scales near apex, the rest hairy.

Clasper 3.25 mm.

LOCALITY RECORDS:

First collected at State College on October 10, 1865 by H. E. Weed. It is rather common over most of Mississippi during the spring and fall months.

HOST PLANTS:

This species is known as the dingy cutworm and is a general feeder.

**FELTIA SUBGOTHICA** Haworth (Plate II, 10)

**Syn. jagulifera** Guerne, **trigesa** Lintner

Clasper slender, margins parallel, several marginal spines, lower margin striate, costal third of inner surface thickly clothed with weak spines, cerena a row of straight spines directed toward base of clasper; saeculus strong, uniformly clothed with spines, terminating in a gently incurved, slender harpe which projects over costal margin of clasper, base of harpe foot-like; clavus produced and knob-like, apex spicate. Uncus slightly curved near apex, vestiture of spines and scales near apex, basal portion with weak spines.

Clasper 3.25 mm.

This species is very similar to *F. guerne* Wlk. and in many cases it is impossible to separate them except with the aid of the male genitalia.

LOCALITY RECORDS:
There are no records of this species in Mississippi. It has been included only because of its similarity to *L. geana* Wlk. and the fact that it has been taken by W. W. Stanley at Knoxville, Tennessee.

**_Feltia annexa_** Treitschke (Plate II, 11)

*Syn. decempuncta* Walker, *antepesita* Guenée

Glasper broader at apex, margins sub-parallel; costal angle produced, acute; ventral angle rounded; ventral margin irregular, spinate; costal margin spinate; corona a straight row of stout spines along apical margin; harpe arising near base, base broad, stout, apical portion incurving, setigerous, apex scooped-shaped; sacculus moderate, spinate; elevus produced, digitate, spinate; oedetum obsolete. Base of tegumen rounded. Juxta cordate, broad. Penisculus produced and shouldered near base, hairy. Ureus stout, slightly enlarged near base, apical portion also slightly swollen, apex beaked, entire structure spinate.

Glasper 4 mm.

**Locality Records:**

This species has been reported from Brookhaven, Ellisville, Escatawa, Grace, Greenville, Gulfport, Holly Springs, Jackson, Laurel, Leakesville, Lexington, Ocean Springs, Ripley, Rolling Forks, State College, Tylerstown and Yazoo City. It is common during April, May and June. There have been a few records in October.

**Host Plants:**

The larvae of this species often do great damage to cotton fields.

At Grace the larvae were reported as having destroyed approximately two
acres of alfalfa. It has also been recorded as damaging cabbage, rutabagas, soy beans, tomato and turnip. From this it is evident that it is a general feeder.

FLATIA MALEFIDA Guenée (Plate II, 18)
Syn. inspinosa Guenée, monesta Walker.

Clasper moderately slender, margins parallel, incurved at apex, outer margin striate, several marginal spines; corona a single row of strong spines directed anteriorly; editum produced into a finger-like projection; saccusus narrow, produced into a strong incurved harpe; harpe with a spoon-shaped apex, hardly reaching the costal margin; clavus produced, apex spinulate. Peniculus well developed, vestiture of hairs. Urenus straight, slightly tapering toward the apex, clothed with numerous long hairs.

Clasper 5.5 mm.

LOCALITY RECORDS:

It has been collected at Brookhaven, Canton, Durant, Ellisville, Gulfport, Holly Ridge, Holly Springs, Kosciusko, Laurel, Lucedale, Natchez, Ocean Springs, Ridgeland, Salins, State College and Yancey City. It is usually most common at State College during March and April. There is one record of it during July.

HOST PLANTS:

It has been reported from corn, cotton, soy beans, strawberry, tomato, and turnip. It is evidently a general feeder.
AGROTIS YPSILON Rottenburg (Plate II, 13)

Syn. suffusa Schiffermüller, calamus Harris

Gasper with margins sub-parallel, produced at costal angle, ventral angle broadly rounded; ventral margin irregular, spinate; costal margin spinate; apical margin set with a row of stout coronal spines; harpe bulbous at base, apex incurved and spatulate; editum produced; clavus absent. Base of tegumen rounded. Juxta ovate with a broad process from anterior margin. Peniculus slender, clothed with long hairs. Uncus stout, thickly spinate above, an area of spines before apex below, apex slightly hooked.

Clavus 4 mm.

LOCALITY RECORDS:

This species has been reported from Belzoni, Brookhaven, Church Hill, Cleveland, Durant, Eden, Ellisville, Grenada, Halm, Lambert, Midnight, Morton, Moss Point, Natchez, Ocean Springs, Picayune, Stoneville, Shaw, Valley, and Yazoo City. It appears to be most abundant during May and June.

HOST PLANTS:

In the South this species is commonly known as the flood ouworm. After the flood of 1927 in the Delta section of Mississippi this species did great damage to many crops. During this time it was reported as injuring apples, beans, corn, cotton, crab grass, peas, soy beans, turnip and numerous other crops.

AGROTIS C-MICHIUM Limnæus (Plate II, 14)

Gasper long, slender, margins parallel, somewhat bulging on ventral
margin, rounded toward apex; corona of strong, irregularly placed spines; rest of clasper with scattered setae, strong marginal spines; harpe short, thick, the spiculate apex hardly reaching the costal margin; pollen present; clavus absent. Penisulus developed and roughened. Uncus narrow, pointed, clothed with setae. Juxta strong, variable in shape.

Clasper 4.25 mm.

LOCALITY RECORDS:

This species is occasionally taken at the light trap at State College. It has been recorded during the spring and fall months.

HOST PLANTS:

The larva is known as the spotted cutworm and, according to S. E. Grumb, is a general feeder on garden and field crops and on the foliage of trees and shrubs.

EPISILIA FUNGORUM Grote & Robinson (Plate II, 15)

Clasper slender, tapering to a point at the apex, corona absent, vestiture of moderately long hairs, marginal spines absent; harpe attached to apex of saeculus, short, heavy, scooped-shaped, apex spiculate; clavus absent. Base of tegmen broad and rounded. Juxta with a strong finger-like process. Uncus broad, spatulate, clothed with short setae.

Clasper 5.75 mm.

LOCALITY RECORDS:

This species has been recorded only from State College. Only one specimen has been collected in the spring. This was taken at the light trap on May 2, 1930. All other records are during September and November.
It is never a common species.

**LYCOPEHOTIA MARGARITOSA** Haworth (Plate III, 1)

**Syn. inermis** Harris

Clasper in general shape suggesting an "S", broader near base, apex enlarged, margins with slender marginal spines; corona of stout spines set in a single row across apical portion of clasper; sacculus weak, a reticulated area near its costal margin, spinate on its basal portion; harpe arising from discal area from a base which is produced and rounded posteriorly, excurved, reaching beyond costal margin, spicate, apex obtuse; ampulla arising just beyond harpe, base broad, tapering toward acute apex, curved toward ventral margin, spicate; clavus and editum obsolescent.

Base of tegumen produced, narrow, apex truncate. Juxta broad, posterior margin produced at center into a narrow process, posterior cornres also produced. Peniculus relatively weak. Unus stout in basal portion, apical third slender, apex clavate and dentate, basal portion hairy and spinate.

Clasper 4 mm.

**LOCALITY RECORDS:**

It has been recorded from Aberdeen, Clarksdale, Cleveland, Danleith, Eden, Greenville, Gulfport, Guntown, Holly Springs, Lamont, Leland, Lexington, Natchez, Neshoba, Oxford, Purvis, Raymond, State College, Wiggins and Wyatte. It is common during May and June.

**HOST PLANTS:**

This species is commonly known as the variegated cutworm. In Mississippi it has been reported from alfalfa, cabbage, corn, cotton, lettuce, onion,
petunia, phlox, potato, sweet pea, and sweet potato. It is obviously a
general feeder.

LYCOPODIUM INFERTA Gehseheimer (Plate III, 2)

Syn. incisae, alabamensis Grote

Clasper long compared to size of tegumen, costal margin slightly hump-
ed, ventral margin greatly excavated near the middle; corona of many stout
spines; saccus reduced; harpe produced parallel with costal margin, bifid,
slightly spicate; clavus well developed, broad and spicate. Umsus notched
near apex on posterior side, vestiture of spines and hairs. Juxta a
shield-like plate.

Clasper 6 mm.

LOCALITY RECORDS:

This species is very common at the State College light trap during
late May, June and July. One specimen was taken at Ocean Springs on July
4. It has been recorded from Gulfport, Raymond, Holly Springs and Poplar-
ville.

HOST PLANTS:

Recorded as feeding in a green corn ear at Shubuta and on peas at
Raymond.
LYCOPODIUM SIMPLICIA Morrison (Plate III, 3)

Syn. simplicia Morrison

Glasper with costal margin produced near base, apical portion insurved and rounded, long spines along both margins; corona a row of spines along apical margin; sacculus narrow, costal margin only slightly curved; harpe arising in expanded area near base, basal portion produced on costal side; harpe slightly insurved, setigerous, apex scoep-like; editum absent; clavus greatly produced, weak, rounded, apex spinate. Base of tegumen narrow, apex acute. Penisculus weak. Unsus slender, straight except for the recurved apex, spinate, apex with long teeth.

Glasper 4 mm.

LOCALITY RECORDS:

This species is rather common at State College and at Columbus during April, May and June. A few have been taken later than this.

POLIA RENIGERA Stephens (Plate III, 4)

Syn. herbimacula Guenée, infesta Walker

Glasper greatly excavated on lower margin near apex giving it the appearance of being hooked, vestiture of hairs and setae; corona absent; ampulla arising just above excavation, strong, ecurved, apex slightly spiculate; harpe arising from glasper, weak, ovate, flap-like, clothed with hairs; sacculus weak; clavus represented by a denticulated area. Base of tegumen triangular. Juxta an elongated shield. Penisculus drawn to a point anteriorally, vestiture of long hairs. Unsus slender, apex slightly hooked, clothed with setae.
Clasper 3.5 mm.

LOCALITY RECORDS:

A common species at Columbus and State College during the period from April 10 to May 30.

POLIA LAUDABILIS Guenée (Plate III, 5)

Syn. indicana Walker

Clasper deeply excavated on ventral margin near apex, broad in central portions, thickly clothed with hairs on ventral portions, basal portion with occasional setae, hairy near apex; corona of short, stout spines arranged in two groups along sides of apex; excurred, apex broad and spatulate, often slightly spiculate; sacculus extended into a spatulate process with sub-triangular apex, extending nearly to costal margin; harpe broad, flap-like, clothed with hairs near apex, and extending upward over extension of sacculus to costal margin; ovula produced and spinose. Juxta shield-like with apical process. Base of tegumen triangular. Umaus rounded, becoming flat and spatulate near apex, vestiture of long hairs.

Clasper 4 mm.

LOCALITY RECORDS:

First taken at State College in October 1895 by H. E. Weed. Recent records at State College range from April 29 to May 30. A few specimens have been taken during September and October.
EKIOPTGA CRINULATA Butler (Plate III, 6)

Clasper broad in basal portion, apical portion much narrower; apex slightly expanded, rounded; corona a row of spines along apical margin; spines along both margins and one or two just inside corona; area along costal margin hairy, few hairs on ventral half except near base; sacculus strong, a few spines and setae near costal margin; harpe stout, long, extending over ventral margin beyond apex of clasper, slightly exsurved, setigerous; there are three processes near base of harpe concerning the homology of which I am uncertain, the innermost process arises from beneath sacculus near its apex and is elavate, the central process arises at approximately the center of base of harpe and is slightly exsurved, spinate at its apex, the outer process is larger than the other two, broad, tapering to an acute apex; etitum and clavus absent. Base of tegmen narrowly rounded. Juxta broad, anterior corners produced laterally, posterior portion reticulate near center. Penisculus narrow, Hairy. Uncus short, weak, slender, spinate, apex acute.

Clasper 4 mm.

LOCALITY RECORDS:

Moderately common at State College during April and May.

NEPHELIDES EHMEDONIA Cramer (Plate III, 7)

Syn. minima Gueneé, expanse Walker, subnivata Walker

Clasper broad, costal bulging near center, ventral margin excised before pollex, both margins with spines; etitum slightly produced and baset
with long, slender spines; corona of stout, irregularly placed spines; pollux long, gently curved, apex spicate; harpe attached to apex of sacculus, broad, rather short, foot-shaped, apex spicate; clavus greatly developed, heavily denticulate, apex produced toward ventral margin. Juxta crescentric. Uncus extremely broad and spatulate, clothed with hairs and spines.

Clasper 5 mm.

LOCALITY RECORDS:

This species has not been taken in Mississippi, but since it has been collected at Mobile, Alabama, it no doubt occurs in the state.

MORRISONIA CONFUSA Hübner (Plate III, 8)

Syn. infructuosa Walker

Clasper with base broad, ventral margin abruptly incurved near center; then continuing toward apex; apical portion of clasper strongly incurved, apical margin straight, set with a row of stout, curved spines forming the corona; ventral angle produced to a point and set with a short, stout claw; ventral margin with stout marginal spines; sacculus rounded, terminated by the stout, strongly recurved harpe which has a slender, tapering apex; inner rounded portion of sacculus thickly and uniformly denticulate, denticulation becoming reticulation near ventral margin; editum absent. Base of tegumen rounded. Peniculus produced and shouldered near base, hairy. Uncus stout, spinate, apex beaked.

Clasper 4.5 mm.
LOCALITY RECORDS:

Record based on three specimens collected by the author at State College on January 13, April 6 and 10.

ORTHOSIA HIBISCI Gueneé (Plate III, 9)

Syn. confluens Morrison

Clasper broad, deeply excised on ventral margin before pollux, apex pointed, numerous marginal spines; ampulla long, exserved, tapering to a point near or in excised area of clasper; corona absent; harpe from a broad base, short, blunt, finger-like, apex spiculate; aesculus strong, produced to a point, area near apex reticulate; editum slightly produced. Peniculus thinly clothed with setae. Base of tegumen slender, apex acute. Ureus tapering toward apex, clothed with a few strong setae, apex diamond-shaped.

Clasper 5 mm.

LOCALITY RECORDS:

Five specimens taken at State College light trap on February 29, March 1 and 14.

XANTHOPASTIS TIMAIS Cramer (Plate III, 10)

Syn. regmatrix Grote

Clasper broad, apex rounded, marginal spines, surface thinly clothed with setae, corona of numerous short spines distributed over apical portion; left clasper bearing a broad triangular harpe, denticulate on inner margin,
clothed with hairs; right harpe absent; sacculus weak; clavus a rounded prominence, spiculate. Juxta broad, shield-shaped. Peniculus slightly produced and clothed with short hairs. Uncus short, blunt, truncate, spiculate.

Glasper 3 mm.

LOCALITY RECORDS:

This species has been recorded from Biloxi, Columbus, Madison, Moss Point, Ocean Springs, Shubuta, Valley and Yazoo City. Records of larvae and adults run from late April to the middle of June.

HOST PLANTS:

It has been reported as damaging amaryllis, jonquil and narcissus. At Biloxi it was reported as "eating everything in sight in a garden" on April 27.

CIRPHIS POMURODORIA Guenée (Plate III, 11)

Glasper broad, with marginal spines; apical portion reduced, a constriction separating this part from the basal portion; a flap-like structure at the constriction, beset with numerous spines; ampulla thick, pointed, excurved to ventral margin, spiculate; harpe reduced to a short, spiculate, process arising from apex of sacculus near base of ampulla; editum developed, flap-like, spiculate. Peniculus well developed, vestiture of long hair. Uncus straight, clavate, beset with spines. Juxta rectangular.

Glasper 4.5 mm.

LOCALITY RECORDS:

Record is from a single specimen collected by Mr. F. H. Benjamin and
determined by Dr. J. McDunnough. It was taken at Cedar Bluff on August 9.

CIRPHIS JUNICOLA Guenée (Plate III, 12)

Syn. adjuta Grote

Clasper broad near base; apex continued into a narrow strap-like extension, a raised structure at the junction of the two parts beset with spines; numerous stout spines along ventral margin, basal portion clothed with hair; harpe expanded, sheet-like, having two projections, ventral projection thin and irregular, dorsal projection a finger-like process, apex spined and slightly clavate. J. B. Smith (Proc. U. S. Nat. Mus. 25: 17) considers the curved process behind the harpe to be a branch of it. Edatum produced, triangular, and spined; clavus not produced, covered with spines. Peniculus well developed and clothed with long hairs. Unusus straight, ogynate, clothed with scales and spines. Base of tegumen rounded, with an anterior process.

Clasper 4 mm.

LOCALITY RECORDS:

Common at State College. It has been collected several times at Columbus. Collection dates run from April 4 to July 3.

CIRPHIS UNIPUNTA Haworth (Plate III, 13)

Syn. extrema Guenée

Clasper relatively slender near base; apex enlarged, spoon-like, a
tooth on costal angle, corona of stout, recurved spines; several marginal spines; harpe enlarged, lobate, extended ventrally, as large as apex of clasper, clothed with hairs on inner surface, spiculate on outer surface; ampulla short, blunt, curved, from a foot-like base; editum produced, spiculate and spinate. Base of tegumen broadly rounded. Peniculus clothed with long hairs. Unsus enlarged near base, remainder tapering, straight, blunt, entire structure clothed with scales and hair.

Clasper 5 mm.

LOCALITY RECORDS:

This species has been reported from Estill, Ethal, Greenville, Greenwood, Moorhead, State College and Yanceo City. The adult is on the wing from early April until October. It is a common species over the entire state.

HOST PLANTS:

The larva is known as the armyworm. It is reported as having destroyed ten acres of alfalfa at Greenville during May. It has also been reported from oats and turnips.

BOROLIA EXTINCTA Guenée (Plate III, 14)

General structure similar to that in the genus Cirphis. Clasper broad at base, having a terminal flap-like extension, apex of clasper drawn to an acute ventral angle; sacculus strong, produced into three structures; superior process slender, produced beyond costal margin, central process stout, excurved, apex acute, inferior process similar to central but shorter and broader at base; clavus greatly produced, stout, setigerous, from a broad base. Peniculus rounded, an area of hairs on lateral angle. Unsus slender,
curved, astigerous, apex beaked.

Clasper 3 mm.

LOCALITY RECORDS:

Record is from a single specimen collected at Wiggins on June 7.
The specimen was determined by Dr. J. McDunnough.

NELEUCANIA RUBRIPENNIS Grote & Robinson (Plate III, 15)

Base of clasper broad, curving; apical portion excavated on ventral margin; ventral angle produced, slender, terminated by one or two short, stout spines; apical margin spinate; an acute process extending from clasper into the excavated area, this may be the ampulla; harpe slender, apex acute, base broad, a rounded projection from its apex ventral to harpe; elatus moderately produced, rounded, spinate. Base of tagumem rounded. Peniculus with produced, hairy lobes near base. Uncus slender, spinate, apex acute.

Clasper 4 mm.

LOCALITY RECORDS:

Record is from two specimens collected at State College on July 31 and August 17.

CUCULLIA ASTEROIDES Guenée (Plate III, 16)

Clasper long, slender, margins sub-parallel, marginal spines, corona a row of closely-set spines; harpe stout, short, spoon-shaped, spicate;
clavus only slightly produced, spiculate. Base of tegumen triangular.

Clasper 6.5 mm.

LOCALITY RECORDS:
Record from four specimens taken at the State College light trap on May 8, 9 and 19.

PSAPHIDA GROTIKI Morrison (Plate IV, 1)

Clasper slender, margins parallel, apex rounded, marginal spines; corona a row of closely-set spines around ventral angle; harpe approximately as long as width of clasper, tapering, apex blunt, spiculate; sacculus weak; editum absent. Base of tegumen sub-triangular. Penisculus armed with short hairs. Uncus straight, tapering, spinate. Juxta shield-shaped, large, two projections on posterior margin.

Clasper 4 mm.

LOCALITY RECORDS:
Five months taken at State College on February 18, March 2 and 4.

PSAPHIDA ELECTILIS Morrison (not illustrated)

The male genitalia of this species are very similar to the other Psaphida occurring in Mississippi (P. groteii). The harpe arises nearer the ventral margin then in P. groteii, and is slightly more oval in shape.
LOCALITY RECORDS:

This species is more common at State College than P. grotei and, like it, is an early spring species. The collection dates run from February 24 to early March.

HETOLYPE ROLANDI Grote (Plate IV, 2)

Syn. *vernalia* Morrison

Clasper slender, margins sub-parallel, apex moderately acute; sacculus tapering toward apex, apex free; harpe short, stout, finger-like, spined, attached to clasper; clavus not produced; editum only slightly produced, rather thinly clothed with hairs. Uncus short, stout, obtuse, beaked, vestiture of spines. Juxta rounded on anterior margin, excavated on posterior margin.

Clasper 3.5 mm.

LOCALITY RECORDS:

This is not a common moth. It has been recorded from State College during late February.

CONISTRA VIATICA Grote (Plate IV, 3)

Clasper broad at base, slender in distal portions; apex surmounted by a stout, pointed process arising from the costal angle; entire clasper thick and highly selerotized; a row of spines along ventral margin before apex -- the corona; a slender process with elevate apex arising from a produced
structure in the discal area. Base of tegumen distinctly divided, sclero-
tized. Penisculus considerably produced, angulate, hairy. Uncus slender,
curved, spinate, apex beaked.

Clasper 6 mm.

LOCALITY RECORDS:

Only two specimens have been collected at State College. These were
taken during the middle of October.

AMPHIPYRA PYRAMIDOIDES Guenée (Plate IV, 4)

Clasper ovate, apical portion large and rounded, clothed with scattered
spines and hairs; a diagonal row of short spines below discal area; sac-
culus moderate; harpe and other armature obsolete. Base of tegumen pro-
duced, apex acute. Penisculus rounded, hairy. Uncus extremely stout, spin-
ate, apex hooked.

Clasper 3 mm.

LOCALITY RECORDS:

This moth has been collected at Como and State College during July and
August.

DIPTERYGIA SCABRIUSCULA Linnaeus (Plate IV, 5)

Clasper long, narrower in the middle, apex rounded, apical portion
armed with spines which become stouter near apex and form a large group of
recurved, coronal spines; pollax produced, rounded; harpe near center of
Clasper, short, curved, spicate, extending toward ventral margin; sacculus strong, spined; clavus not produced. Base of tegumen broadly rounded. Penisulus clothed with hairs. Uncus short, obtuse, finger-like, slightly clavate, clothed with hair.

Clasper 4.5 mm.

LOCALITY RECORDS

Only one specimen has been taken in Mississippi. This was collected at the moth trap at State College on May 29, 1931.

**TRACHEA MISELIOIDES** Guenée (Plate IV, 6)

Clasper tapering toward apex, costal margin slightly produced, marginal spines, vestiture of weak spines and hairs; corona absent; harpe absent; sacculus short, rounded; clavus rounded, not spined. Base of tegumen rounded. Penisulus clothed with hairs. Uncus curved, beaked.

Clasper 3 mm.

LOCALITY RECORDS:

Recorded from State College on April 29, May 19 and August 15. There is one record from Como on September 5.

**TRACHEA INDOGILIS** Walker (Plate IV, 7)

*Syn. remissa* Hübner

Clasper broad near base, tapering to a rounded apex, marginal spines; corona a group of straight spines; harpe broad and foot-like with heel
protruding over costal margin; sacculus weak; clavus not produced, spined.
Base of tegumen triangular, apex rounded. Juxta with two processes on
posterior margin on either side of a rounded area. Peniculus greatly pro-
duced, clothed with long hair. Uncus short, heavy, apex obtuse, spinate.

Clasper 3.5 mm.

LOCALITY RECORDS:

The only record of this species is a specimen collected at State
College by H. E. Weed in 1896.

TRACHEA IMPULSA Guenée (Plate IV, 8)

Clasper broad near base, constricted near center, lobate at apex,
marginal spines, corona two rows of spines; harpe short, clavate, spinate;
clavus not produced, set with long hairs; clavus broad, produced, lobate,
irregular, spiculate. Juxta cordate, posterior margin spiculate. Penicu-
lus produced, lobe-like, hairy. This type of peniculus seems to be a char-
acteristic of the group. Uncus short, broad, tapering toward apex, cloth-
ed with hairs and spines.

Clasper 4.5 mm.

LOCALITY RECORDS:

This species has been collected only twice in Mississippi. One speci-
men was taken by J. M. Langston at State College on May 8, and by the au-
thor on June 1 at the same place.
PERIGEA APAMEOIDES Gueneé (Plate IV, 9)

Clasper slender, margins parallel, basal portion enlarged, vestiture of hairs and spines becoming stouter toward apex; spines near apex longer, stouter, marginal spines on costal margin; harpe arising near base of clasper, short, not reaching the costal margin, obtuse, slender, spicate; editum absent; clavus not produced. Penisculus produced into a shoulder, clothed with hairs. Base of tegumen obtusely triangular. Uncus falcate-tygmate, free of hairs and spines. Juxta large, produced into a process anteriorly.

Clasper 4 mm.

LOCALITY RECORDS:

Record based on six specimens collected at State College on August 12 and October 11.

PERIGEA XANTHOIDES Gueneé (Plate IV, 10)

Clasper with costal angle produced, rounded on ventral angle, apical portions densely clothed with hair, corona absent, marginal spines absent; sacculus large, covering basal portions of clasper, rounded apically, a few setae on apical portion; harpe arising from center of clasper, tygmate, spicate; clavus not produced. Juxta produced into a process on posterior margin. Penisculus a protuberance on ventral surface of tegumen from which arise many hairs. Uncus falcate, clothed with setae.

Clasper 2.75 mm.
LOCALITY RECORDS:

Recorded from Cedar Bluff and State College. It is occasionally found in light trap collections during late May and early June.

PERIOEA CUPENTIA Cramer (Plate IV, 11)

Syn. epopae Cramer, infulix Guenée, confederata Grote

Clasper long, crescentic, broader in basal portion, numerous marginal spines on costal margin, apex rounded; corona of stout spines near apex, spines continuing down center of clasper; left harpe pointed, extending for half its length beyond costal margin, expanded toward the base, setigerous; right harpe similar, but instead of being straight it is falcate, apex obtuse; editum represented by a patch of spines, clavus produced, broad, rugose. Base of tegumen obtuse. Peniculus produced, vestiture of long, heavy spines. Tegumen bearing lobes on either side of uncus. Uncus crescentic, apex pointed.

Clasper 5 mm.

LOCALITY RECORDS:

First Mississippi records of this species were two specimens taken at State College in June and October 1896 by H. E. Weed. The author collected three specimens at State College on September 1 and October 12.
PERIGEA SUTOR Guenée (Plate IV, 12)

Syn. eleufasta Walker, fabrefasta Morrison, servina Smith

Clasper broad, crescentic, distal half set with heavy spines, remainder of clasper setigerous except for editum which consists of a triangular patch of stout spines, an area of spines on basal portion; harpe stout, blunt, curved, reaching to the costal margin, setigerous; clavus consisting of a rugose area. Base of tegumen rounded. Juxta long, anterior margin incised at corners. Peniculus set with long hairs, inner margin serrate. Tegumen lobed on either side of uncus. Uncus long, slender, slightly curved at apex.

Clasper 4 mm.

LOCALITY RECORDS:

First collected in Mississippi by H. E. Weed at State College in October 1895. It was also collected by W. V. Reed on June 28, 1905 at the same place. Recent records include Como, Gulfport and State College during May and June.

LUPARINA PASSER Guenée (Plate IV, 13)

Syn. incallida Walker, loculata Morrison

Clasper broad at base, slender near center, apex spatulate, marginal spines; corona of spines along apical margin and a larger area of spines near ventral angle; harpe short, ovate, spiculate; sacculus weak. Base of tegumen rounded. Peniculus greatly produced, clothed with hair. Uncus flattened dorso-ventrally, tapering toward apex, apex obtuse, hairy.
Clasper 4 mm.

LOCALITY RECORDS:

Two specimens collected by the author at State College on May 17 and 27.

CALLOPISTRIA FLORIDENSIS Guenée (Plate IV, 14)

Syn. stresa Grote

Clasper with basal portion broad, apical portion tapering rapidly to a slender, digitate process clothed with hair and spines, marginal spines; a patch of long, spatulate hairs on base-ventral margin; sasculus produced ventrally beyond base-ventral margin, apex with two processes, one process longer than other and curved over it, giving the structure a mitten-like appearance; harpe also produced ventrally, apical structure similar to that of sasculus; editum an area of weak spines; clavus not produced. Base of tegumen rounded, a digitate process produced posteriorally and clothed with hair. Juxta trigonate. Peniculus well developed, rounded, devoid of pubescence. Uncus short, enlarged near apex, apex tapering, beaked, clothed with weak spines.

Clavus 3 mm.

LOCALITY RECORDS:

Record from three specimens collected at State College on August 20 and October 16.
ACHERDOA FERRARIA Walker (Plate IV, 16)

Syn. ornata Neumoegen

Glasper simple, costal margin slightly produced in some cases, apex rounded, vestiture of scattered spines and setae, devoid of armature. Base of tegumen rounded, anterior margin slightly incised. Peniculus not developed. Uncus short, broad, apex obtuse and beaked.

Glasper 1.3 mm.

LOCALITY RECORDS:

Two specimens collected at Ocean Springs on June 5 and 29.

CHYTONEX PALLIATRICULA Guanée (Plate V, 1)

Glasper slender; apex slightly expanded, rounded, set with spines; ventral margin produced near center; a stout, acute process from glasper near center; a shorter, rounded process near base; a slender process produced beyond costal margin from a base located almost opposite the second process mentioned; the homology of these structures unknown; sacculus strong, rounded. Base of tegumen triangular. Peniculus greatly developed, rounded, produced, hairy. Uncus expanded near apex, spinate, apex beaked.

Glasper 3.3 mm.

LOCALITY RECORDS:

One specimen has been collected in Mississippi. This was taken at State College on April 10.
HARRISIMMA TRISIGNATA Walker (Plate V, 2)

Genital structure highly sclerotized; clasper short, broad, apex slightly produced; pollax broad, short, apex rounded; harpe arising near apex, stout, excurved, apex obtuse; sacculus covering most of clasper, rounded, strong. Base of tegumen: produced, apex narrowly rounded. Penisculus strong, spinate. Unsus stout, gently curving, setigerous, apex acute.

Clasper 2.5 mm.

LOCALITY RECORDS:

Record is from two specimens collected at State College on August 13 and 22.

POLYGRAMMAE HEBRAEICUM Hübner (Plate V, 3)

Clasper broad at base, tapering toward apex, apex irregularly denticulate, without corona, marginal and scattered spines; ampulla stout, spinellated, apex acute and reaching past costal margin; harpe falcate, slender, apex recurved, setigerous; clavus not produced; base of tegumen long, drawn to a rounded apex. Juxta slender, produced into two spreading arms at posterior margin. Penisculus moderately produced, hairy. Unsus gently curved, apex recurved, beaked, clothed with setae.

Clasper 3.5 mm.

LOCALITY RECORDS:

Two specimens taken at State College, one in a moth trap and the other with a hand net on April 8 and May 8.
LEUCONYCTA DIPTEROIDES OBLITERATA Grote (Plate V, 4)

Right clasper slightly more narrow and pointed than left; claspers broad, ovate; sacculus strong, rounded, spinate, hairy; harpe arising from discal area beneath a flap-like structure, weak, curving, apex acute. Base of tegumen triangular, apex narrowly rounded. Peniculus broad, a small area of spines on lateral surface. Uncus curved, spinate, apex beaked.

Clasper 4.8 mm.

LOC LITY RECORDS:

Occasionally captured at lights at State College during April and May.

AGRONYCTA VINNULA Grote (Plate V, 5)

Clasper rounded on apex, bearing marginal spines, corona absent; harpe short, stout, beaked, inner edge not toothed, bearing numerous spines along inner margin, a hump on costal margin before apex; ediment an area of long, slender spines; clavus not produced. Base of tegumen tapering to a point. Juxta shield-like, posterior edge emarginate. Uncus comparatively short, stout at base, tapering to a beaked apex.

Clasper 2.5 mm.

My study of the genital structure of this moth does not agree with the work of J. E. Smith. He indicates the harpe as having a dentate edge, and as being scoop-like, whereas this is not at all the case. This structure is beaked, has a hump on the costal margin near the apex and its inner
edges are without teeth.

LOCALITY RECORDS:

Occasionally collected at the State College light trap from the middle of July to early August.

ACRONYOTA ALBANUFA Grote (Plate V, 6)

Syn. walkeri Andrews

Clasper ovate, apex rounded, costal margin undulate, spines on both margins; harpe arising in discal area from a broad base, short, stout, apex beaked; editum a large spinate area; saeculus strong, rounded; clavus a spinate area. Base of tegumen triangulate, apex acute. Juxta ovate, anterior margin notched. Peniculus rounded, hairy. Umsus curved, spinate, apex slightly hooked.

Clasper 3 mm.

LOCALITY RECORDS:

Only one specimen of this moth has been taken in Mississippi. This was captured at the light trap at State College on May 18, 1931.

ACRONYOTA CONNECTA Grote (Plate V, 7)

Clasper moderately slender; apex rounded, spinate on inner surface; saeculus strong, curved, apex produced; extension of saeculus stout, extending below ventral margin, spinate on inner surface before apex, apex beaked; superior process present, excurved. Base of tegumen triangulate,

Clasper 4 mm.

LOCALITY RECORDS:

Rather common at State College during April and May.

ACRONYCTA EXILIS Grote (Plate V, 8)

This species is very similar to A. albarufa Grt. It differs from it only in some minor details of the harpe. The base of the harpe is expanded on its costal margin into a triangular point, the harpe itself extends almost parallel with the costal margin of the clasper, while in A. albarufa Grt. it is set at an angle.

Clasper 2.7 mm.

LOCALITY RECORDS:

Record is from one specimen collected at State College on July 2, 1935.

ACRONYCTA HABITATA Grote (not illustrated)

This species was determined from one specimen by Dr. J. McDunnough who remarks that it appears to be a small specimen. The genitalia are almost identical with those of A. albarufa Grt. In the latter species the reniform spot is centered with reddish brown, while in this species the reniform is centered with dark gray.

LOCALITY RECORDS:
One specimen captured at State College on July 30, 1935.

ACRONYCTA PRUNI Harris (Plate V, 9)
Syn. smithi Butler

Clasper slender, slightly enlarged at apex, apex bent inward and rounded; saeculus two thirds as long as clasper and projects ventrally and parallel to it. The apical portion of saeculus consists of three structures; the inner-most or superior process is setigerous, arising from the costal margin of saeculus near its apex, the center structure is undoubtedly the harpe and is a slightly incurved continuation of saeculus, the outer armature is a blade-like process having, at times, its corners produced into teeth, it is often termed the inferior process. The apical portion of the clasper is clothed with stout, straight spines which form the corona, these spines continuing along the costal margin of the clasper; editum not produced, consisting of a large area of hairs; slavus slightly produced, spiculate. Base of tegumen tapering to a point. Penisculus not produced, hairy. Unus falcate, apex acute.

Clasper 4.75 mm.

LOCALITY RECORDS:

It has been taken at Columbus and State College. Collection records run from April 16 to May 8.
Chap. 4, 5 etc.

From the outset, extraordinary steps have been taken to prevent breaches of the secret arrangements, and one’s doubts, exorbitant processes, have been confirmed by the departure of the member, secret arrangements into a onetime, secret processes that are continually secret, secret arrangements into a onetime, secret processes.

Chap. 4, 5, 6 etc, secret procedures, exorbitant below treason enacted, apportioned properly, very.

Chap. 4, 5, 6 etc. secret procedures, inner surface, exorbitant exorbitant procedure, strong.

(Plate A, 11)

AUPRATORIA RHODOSA PEGINA HARMY

The middle of July to early August.

April 1953. It has now been established by the author at the same place known first collected in Massachusetts by H. J. Weed as being collected in

Chap. 5, 6 etc.

Aquatic, marine, exuberant, exorbitant, set with slender spines.

Gale, Penumbral attached with scales, juvenile single-leaf, exorbitant, exuberant, exorbitant, exorbitant, exorbitant. exorbitant, exorbitant, exorbitant, exorbitant, exorbitant, exorbitant, exorbitant, exorbitant, exorbitant, exorbitant, exorbitant.

Aquatic, marine, exuberant, exorbitant, exorbitant, exorbitant, exorbitant, exorbitant, exorbitant, exorbitant, exorbitant, exorbitant, exorbitant, exorbitant, exorbitant, exorbitant.

(Plate A, 10)
Record is from one specimen taken at State College on April 16.

ACRONYCTA AFFLICTA Grote (Plate V, 18)

**Syn. dolasa** Druse

Costal margin of clasper incurved, ventral margin produced into a rounded expansion before ventral angle; marginal spines on both costal and ventral margins; rounded apical portion of clasper clothed with stout spines; sacculus strong, rounded, set with scattered setae which are most numerous on costal margin; harpe arising slightly beyond ventral expansion from a broad base, base extended anteriorly, short acute, setigerous, superior process arising from anterior extension of base, harpe stout, apex claw-like and incurved, costal margin of harpe and base slightly undulate; clavus absent; editum an area of slender spines. Base of tegumen drawn to a point apically, considerably sclerotized. Juxta ovate. Peniculus rounded, clothed with long hairs. Uncus stout, curved, apex acute and hooked, clothed with spines.

Clasper 5 mm.

**LOCALITY RECORDS:**

Seven specimens collected by the author at State College during the middle of April and one on August 15.
ACRONYCTA IMPLETA Walker (Plate V, 13)

Syn. lutescens Grote & Robinson

Gasper ovate, apex rounded, corona represented by a few weak spines which continue along costal margin; sacculus weak; clavus represented by a series of short spines; harpe arising from foot-like base having an acute point on ventral side, curved inward and then back giving it a crescentic shape, apex slightly recurved and beaked, astigerous. Juxta incised on anterior margin. Penicillus produced, clothed with long hairs. Uncus curved, stout, apex acute and beaked, vestiture of weak spines.

Gasper 4 mm.

LOCALITY RECORDS:

Collection records from Macon, Wiggins and State College during the latter half of April. One record as late as August 10.

ACRONYCTA LOBELIAE Gueneé (Plate V, 14)

Syn. crypta Butler

Gasper heavily sclerotized, apex rounded, apex and distal one third clothed on inner surface by stout spines becoming weaker toward base, numerous marginal spines; sacculus strong, produced into an apical portion bearing three structures; the inferior process blade-like with straight edge; harpe a continuation of sacculus, stout, recurved, apex beaked; superior process arising from costal margin of sacculus nearer base, finger-like, hardly reaching costal margin, spines near apex on basal side; edillum a row of long spines; clavus not produced, astigerous. Juxta incised on
posterior margin, a process from anterior margin. Base of tegumen rounded.
Peniculus not produced, hairy. Um sus weak as compared to remainder of gen-
ital structure, slender, apex acute, setigerous.

Clasper 6.5 mm.

LOCALITY RECORDS:
Moderately common at the State College light trap during April and May.

HOST PLANTS:
The larvae feed upon oaks.

AGRONYCTA POPULI Riley (Plate V, 15)

Clasper tapering toward a rounded apex, inner surface thickly clothed
with weak spines; harpe arising near disal area, stout, gently insurved,
apex beaked and reaching beyond costal margin; sacculus strong, costal mar-
gin slightly emarginate; editum a spinate area. Base of tegumen produced,
rounded. Peniculus rounded, hairy. Um sus stout, spinate, apical portion
tapering, apex hooked.

Clasper 5.6 mm.

LOCALITY RECORDS:
Record from two specimens collected at State College during April.

AGRONYCTA RUBRICOMA Guenée (Plate VI, 1)

Clasper broadly ovate, uniformly clothed with hair and scattered
spines, marginal spines; harpe stout, apex beaked, sharply bent near cen-

Gasper 5.5 mm.

LOCALITY RECORDS:

Four specimens taken at State College on April 14, 15 and 29.

AGRONYCTA LONIA Guenée (Plate VI, 2)

Syn. xylincides Guenée, xyliniformis Guenée, pallidicoma Grote

Gasper ovate, apex rounded, marginal spines, corona absent; sacculus moderately developed, rounded; clavus not produced, represented by an area of small spines; harpe arising near middle of gasper near ventral margin, stout, slightly excurred, apex beaked and bent inward, inferior process tooth-like. Base of tegumen drawn to a rounded apex. Peniculus moderately produced, hairy; tegumen broad, a narrow incision up the ventral surface. Uncus stout, curved, spinate, apex beaked.

Gasper 5.25 mm.

LOCALITY RECORDS:

Four specimens taken at State College on April 13, 16 and 24.
ACRONYCTA OHLINITA Abbot & Smith  (Plate VI, 3)

_syn. salicis Harris_

Clasper broad, apex drawn to an acute point, marginal spines, apical portion clothed with weak spines; sesculus well developed, setigerous, slightly extended over ventral margin; harpe long, reaching past the costal margin; excurved near apex, incurved at apex, apex acute, bearing a few setae; edictum slightly produced, hairy. Base of tegumen drawn to a rounded apex. Juxta shield-like. Peniculus slightly produced, hairy. Uncus comparatively stout, curved, apex beaked, bearing weak spines or setae.

Clasper 3.5 mm.

LOCALITY RECORDS:

Specimen have been collected at State College as follows: March 2, April 16, June 10 and August 12.

DELTA RAMOSULA Guenée  (Plate VI, 4)

Clasper excavated on ventral margin near apex, ventral margin bearing a stout spine (pilus); stout, long marginal spines; corona of stout spines; sesculus moderately developed; clavus a large, rounded extension of the inner margin of sesculus, thickly denticulate; a trigonate, reticulated area near apex of sesculus. Harpe short, rounded, not reaching costal margin, spiculate; ampulla, stout, fluted, extending into excavated area of ventral margin. Base of tegumen rounded, a short process at apex. Juxta small, diamond-shaped. Peniculus not produced. Uncus short, stout at base, tapering toward the obtuse apex, hairy.
Gaster 3 mm.

LOCALITY RECORDS:

Recorded from Cedar Bluff, Ocean Springs and State College. It is common at State College during late May. It has been taken as early as February 10.

CATARENA LINEOLATA Walker (Plate VI, 5)

Syn. petræa Walker, miscellus Grote

Gaster broad at base, narrower at center than at apical portion, gently incurved, set with stout spines; corona a row of stout spines; sarcoculus well developed, scattered setae over surface; harpe a continuation of sarcoculus, stout, incurved, bifid at apex; editum produced, short spinules at apex; clavus absent. Base of tegumen only slightly pointed. Juxta incised on anterior margin and concave on posterior and lateral portions. Peniculus well developed, hairy. Uncus crescentric, apex slightly beaked, setigerous.

Gaster 2 mm.

LOCALITY RECORDS:

First collected by the author at State College in 1930. It has also been taken at Columbus. It is rather common from middle May through June but has been collected as early as March 14.
PRODENA DOLICHOS Fabricius (Plate VI, 6)

Syn. *communis* Abbot & Smith

Clasper broad, apex excurred; sacculus almost as long as clasper; corona consisting of a few scattered, stout spines; many long marginal spines; harpe arising near apex from a base extending to base of clasper, slender, incurved, apex acute, setigerous; clavus consisting of two unequal, rounded prominences, the inner-most finger-like, other dome-shaped, both clothed with spines. Base of tegumen broadly rounded. Peniculus moderately developed, hairy. Unsus long, slender, curved, apex acute, setigerous.

Clasper 5 mm.

LOCALITY RECORDS:

Collected by H. E. Weed at State College in October and May 1895. It was collected by the author at State College on June 4.

HOST PLANTS:

It has been recorded from cowpeas.

ANDrei ORNITHOCAlli Ouensé (not illustrated)

Syn. *lineatella* Harvey

The genitalia of this species are very similar to those of *P. sudionta* Grn.

LOCALITY RECORDS:

This species is common in all sections of the state from May until September.
HOST PLANTS:

The larva of this species is known as the yellow-striped armyworm. It has been reported as damaging carnation, cherry laurel, corn, cotton, crab grass, daisy, okra, onion, petunia, soy bean, tomato and zinnia.

PRODEMIA BUDIOPTA Guenée (Plate VI, V)

Syn. flavimedia Harvey

Clasper and sacculus sub-equal; clasper rounded on costal margin, costal angle rounded, ventral angle moderately acute; corona absent; long marginal spines; elavus produced into a dome-like process, thickly spinate, spines continuing a short distance up the clasper; editum produced, slender, gently signate, apex setigerous; sacculus extending nearly to apex of clasper, ventral margin undulate, undulations set with long, stout spines, rest of surface hairy or setigerous; harpe arising from a long, broad base, stout, excurved, apex acute, usually about five setae near apex. Base of tegumen rounded. Peniculus but little developed, thinly clothed with hairs. Unsus gently curved, gradually tapering toward the acute apex, a few scattered spines and setae.

Clasper 3.5 mm.

LOCALITY RECORDS:

Recorded from McNeill and State College. It is on the wing from early June to October.

HOST PLANTS:

It has been recorded from corn and cotton.
LAPHYOMA FRUCTIPERDA Abbot & Smith (Plate VI, 8)

Syn. macra Guenée, insita Walker, signifera Walker, autumnalis Riley

Very similar in general structure to the rest of the Prodenia group. Clasper and sacculus sub-equal; sacculus broad and rounded on ventral margin, ventral margin undulate and set with long, stout spines; a produced area near base of clasper that does not appear to be part of clavus, set with spines; clavus a produced knob near base, thickly spinate; editum, slender, gently curving, apex obtuse and spinate. Harpe similar to that in P. audituata Gm.

Clasper 3 mm.

LOCALITY RECORDS:

This insect has been recorded from all parts of Mississippi. During certain seasons it does considerable damage. The adults are on the wing from late June until late September.

HOST PLANTS:

It has been recorded as feeding upon alfalfa, Bermuda grass, corn, cotton grass, gladiolus, Irish potato, oats, paspalum, peach, sugar cane, and turnip. It is a general feeder and is commonly known as the fall armyworm.

CARADROMA TARDA Guenée (Plate VI, 9)

Syn. prina Smith

Clasper incurving, apex rounded, inner portion of apical region densely clothed with slender, weak spines; a rounded, thickly denticulate promi-
mance at ventral angle dorsal to the finger-like pollax; harpe conical, margins irregular, spinate, reaching the costal margin; edaxim a moderately produced, dome-like prominence set with long spines; clavus represented by a heavily dentate, spinate area. Base of tegumen moderately acute. Penisculus developed, angulate near base of clasper, vestiture of long hairs.

Uncus broad, apex obtuse.

Clasper 4 mm.

LOCALITY RECORDS:

Moderately common at State College. It has been collected from March 2 to early May.

GALGULA PARTITA Guenée (Plate VI, 10)

Syn. subpartita Guenée, ferrugineae Walker, typica Morrison,
biae Druce, pendula Druce, hepata Guenée

This species and the light form hepata were described by Guenée in 1852. My own study of this genus convinces me that we are dealing merely with two sexes and not with two varieties. I have examined several hundred specimens of the so called form hepata and have never seen a single female. On the other hand I have examined 40 or 50 specimens of partita and have never found a male.

Clasper broad at base, tapering toward apex, apex enlarged and turned inward at right angles to costal margin, this inturned lobe thickly clothed with stout spines; ventral half of clasper extended beyond the lobed apex, rounded, clothed with hair and spines, this structure may be homologous with the pollax in other moths; harpe a continuation of sacculus,
stout, apex obtuse, hardly reaching ventral margin; superior process present, exsurved, stout, half as long as harpe, apex obtuse; clavus greatly produced into a spindle-shaped structure with its acute apex directed toward apex of clasper, surface thickly denticulate, whole heavily sclerotized. Base of tegumen slightly pointed. Peniculus not developed. Uncus short, stout, apex rounded, basal portion set with weak spines, apical one third clothed with heavy striated scales arising from broad bases.

Clasper 2.5 mm.

LOCALITY RECORDS:

Recorded from Columbus, Cone, Gulfport, and State College. It is a common species from middle April to late August.

GRAMBODES TALIDIFORMIS Guenée (Plate VI, 11)

Syn. congjungens Walker

Clasper broad, ovate, apex drawn to a rounded point, an ovate prominence on costal angle, entire surface with scattered setae; harpe arising near center of costal margin and extending over it, base broad, apex acute; editum produced, dome-like, set with slender spines. Base of tegumen rounded. Peniculus but little developed, hairy. Uncus curved, stout, beaked, setigerous.

Clasper 3 mm.

LOCALITY RECORDS:

Recorded from Cedar Bluff, Cone, Meridan and State College. Moderately common during April, May and June.
PLATYSERIA VIDENS Guenée (Plate VI, 12)

Syn. indigena Walker, atriciliata Grote, meekai Speyer

Clasper long, narrow, crescentic, apex obtuse, inner surface clothed with spines becoming stouter toward apex; editum and clavus absent; saccus weak; harpe arising slightly before center of clasper, stout, incurved, reaching over costal margin, apex acute, astigerous. Base of tegumen rounded. Penisulus narrow and hairy. Tegumen lobed on each side of base of urosus. Urosus slender, long, apex cygnate and acute.

Clasper 5 mm.

LOCALITY RECORDS:

Recorded from Columbus and State College. It is common at the State College light trap during April, May and June. There are, however, several records much earlier than this. It was taken by the author at State College on January 15, 1932.

MONODES NUCICOLORA Guenée (Plate VI, 13)

Syn. minisignata Walker, paginata Morrison

Margins of clasper sub-parallel, basal half broader than apical half, apex moderately acute, a row of separated spines along ventral angle, ventral margin with long marginal spines; harpe with a superior process, which is stout, acute, short, and has a peculiar flap-like, pointed process arising from its ventral side; harpe short, acute, apex directed obliquely toward ventral margin; ampulla arising dorsad to harpe, excurved, ovate, beaked, set with slender spines. Base of tegumen pointed. Juxta deeply
incised on posterior margin. Penisculus produced and lobe-like, hairy. Unus stout, apex tapering to a beak, hairy.

Glasper 5 mm.

LOCALITY RECORDS:

Record from seven specimens collected at State College on February 10, 16 and October 10, and from two specimens taken at Ocean Springs on July 4.

MONODES CHALCEDONIA Hübner (Plate VI, 15)

Syn. amoa Guenzé, emuncta Walker, vitrea Walker

irremitata Walker, tructa Grote

Glasper incurved, a rounded prominence near center of the ventral margin, apex moderately acute, inner surface of outer half densely clothed with hairs and spines, spines becoming more stout apically, marginal spines; harpe falcate with apex bent toward ventral margin, a row of teeth along inner surface near apex, an inferior tooth-like process present, a rounded process arising from basal region of harpe which may be a superior process; clavus thumb-like, weak; ampulla a tooth-like process arising from region beyond harpe, weak, apex rounded. Base of tegumen drawn to a point. Juve- ta shield-shaped. Penisculus greatly produced, rounded, hairy. Unus stout near base, gradually tapering toward the acute, hooked apex.

Glasper 3.25 mm.

LOCALITY RECORDS:

Specimens have been taken at Ocean Springs on July 3, State College on August 24, and on Cat Island, off the coast, on August 8. It is never an abundant species.
been contracted as come on July 20.

It is common at State College during April, May, and June. To this time
the most common representation of the Gnome in Pennsylvania.

TOOKIT ROOBIRG

Chapter 5

A native of the

than in the other two species of the same species, been observed with
more standard as in the \textit{S. aeruginita} more or less with those bakers. There were more standard
enough, which or in the more standard. Penetrating toward the center
entirely from bark to bark, opened evenly inserted in the process
executed beyond sections portion, each bark-tube, slightly inserted
bark and inserted near base, section near center, especially
waved and inserted near base, section near center, especially
separated and inserted near base, section near center, especially
especially near base on ventral margin, seared margin at apex inserted,
Classed inserted, tended near insertion, section near base, marginal spine

\textit{Syl. rotundata} Horner (Fries VI, 12)

MONONGAHELA RIVER (Plate VII, 12)
tegumen triangular, apex acute. Penisculus well developed, angulate at base, hairy. Uncus stout, spinate, curved, apex hooked.

Clasper 3.7 mm.

LOCALITY RECORDS:

Two specimens have been collected at State College on May 13 and 27.

ACHATODES ZEAE Harris (Plate VII, 8)

Syn. sandix Guenée

Clasper four times as long as width at center, margins sub-parallel, apex obtuse; corona an area of stout spines; ampulla pointed toward ventral margin, thick, short, apex ovate and set with spines and teeth; harpe absent; editum tuberculate, set with long hairs or spines; clavus a wide brush-like structure, drawn to a point posteriorly. Base of tegumen rounded. Penisculus produced into a rounded shoulder near base of clasper, hairy. Uncus straight, flat, apex truncate, set with weak spines.

Clasper 2.75 mm.

LOCALITY RECORDS:

This moth has been recorded from Cedar Bluff on May 31 and Wiggins on May 10 and 12.

PYREHIA UMBRA Hübner (Plate VII, 3)

Clasper slender, margins sub-parallel, apex incurved, a spinate area at the base; corona of stout, recurved spines; inner margin clothed with
long hairs or scales having bifurcate spines; spines on ventral margin; harpe slender, extending well over costal margin, excurved, apex slightly incurved, spined. Base of tegumen rounded, apex slightly pointed. Peniscus rounded, hairy. Uncus stout, apex beaked, clothed with weak spines.

Clasper 4.5 mm.

LOCALITY RECORDS:

Record from four specimens collected at State College on April 29, May 18, 27 and June 23.

PAPAIPAMA NERGIS NITELA Guanée (Plate VII, 4)

Clasper broad at base, tapering toward a narrowly rounded apex, marginal spines; pallet stout, apex acute; pallet and apex of clasper thickly clothed with stout spines; harpe stout, excurved, dentisulate on posterior margin, apex acute; saeclus strong, rounded; clavus a hairy, brush-like area. Base of tegumen tapering to a narrowly rounded apex. Peniscus produced into a shoulder near base of clasper, hairy. Uncus curved, apex hooked, dorsal surface set with weak spines.

Clasper 4 mm.

LOCALITY RECORDS:

HOST PLANTS:

This species is known as the stalk borer. It has been reported from corn, Irish potato, tomato and cotton.

OGDOCONTA CINEROLA Guenée (Plate VII, 5)

Syn. atomaria Walker

Clasper becoming broader toward apex, broadly insised on ventral angle, uniformly hairy; sacculus extended below clasper into a long gently curved, finger-like projection, clothed with hair and marginal spines; harpe a weak process arising near base of sacculus and extending into area between clasper and the extension of sacculus; editum and clavus absent. Base of tegumen narrowly rounded, apex with a small tip. Peniculus moderately developed, hairy. Uncus weak, slender, hairy, apex beaked.

Clasper 5.5 mm.

LOCALITY RECORDS:

This moth is common in the light trap collections at State College during April, May and June. It has been taken as late as September 8.

COSMIA ORINA Guenée (Plate VII, 6)

Syn. genescena Behr.

Clasper weak, margins sub-parallel, hairy, apex narrowly rounded, sacculus rounded, armature absent. Base of tegumen produced, compressed. Peniculus rounded, spicate. Uncus stout, gently curving, spinate, apex
STIRIA RUGIFRONS Grote (Plate VII, 7)

Clasper broad, slightly broader toward apex, margins sub-parallel, apex rather truncate, marginal spines of various lengths, three or four recurved spines on costal angle; saeculus weak; harpe arising from distal portion near ventral margin, short, incurved, apex acute; clavus rounded, spinate prominence. Base of tegumen acute. Peniculus rounded, hairy. Uncus curved near base, remainder straight, apex hooked, clothed with short spines. Juxta broad, shield-like.

Clasper 3.25 mm.

LOCALITY RECORDS:

Record from three specimens taken at State College light trap on September 14, 16 and 24.

STIRIODES OBTUSA Herrich-Schaeffer (Plate VII, 8)

Syn. obtusula Zeller

Clasper ovate, apex rounded, ventral margin rounded, costal margin straight, spines along both margins; harpe arising near ventral margin,

Clasper 1.75 mm.

LOCALITY RECORDS

This species has been collected at Ocean, Ocean Springs and State College during June and July.

PLAGIOMMUSIUS PITTOCHROMUS Grote (Plate VII, 9)

Syn. media Morrison

Clasper gently tapering toward a narrowly rounded apex, apex set with a row of spines - the corona; sacculus with costal margin consave; no other armature; inner surface set with numerous spines or hairs. Penisulus weak, setigerous. Uncus stout, ventral surface produced near base, spinate, apex acute.

Clasper 2.5 mm.

LOCALITY RECORDS:

Three specimens examined from State College that were collected on August 31.

AMOLITA FISSA Grote (Plate VII, 10)

Clasper broadly attached to tegumen, tapering toward apex which is
enlarged into a more or less complicated structure; pollex large, extend-
ing beyond apex of clasper, margin set with weak, recurved spines; apex
of clasper rounded, the two not exactly symmetrical, left apex more round-
ed, set with weak spines, right apex more pointed, few spines; a few long
spines along costal margins and along ventral margins near base; editum
produced, rounded, set with spinules; clavus absent. Base of tegumen
rounded. Peniculus weak. A lobe on each side of base of uncus. Uncus
broad at base, slender in middle portion, apex enlarged and capitate, se-
tigerous.

Clasper 2 mm.

LOCALITY RECORDS:

Record from two specimens taken at Ocean Springs on July 16 and one
specimen taken at Gulfport on June 7.

EUTHISANOTIA UNIO Hübner (Plate VII, 11)

Clasper broad, costal margin swollen near center, apex narrowly round-
ed, apical region thickly clothed with spines and with marginal spines; ed-
itum an area of long weak spines; harpe a continuation of saeculus, extend-
ed below ventral margin and parallel with it, stout, apex slightly incurv-
ed, setigerous; clavus not produced. Base of tegumen broadly rounded. Pe-
niculus well developed, not shouldered, hairy. Uncus stout, hairy, extreme-
apex tapered to an acute beak.

Clasper 3 mm.

LOCALITY RECORDS:

This beautiful nectuid has been recorded from Gumo and State College
on June 26, July 10 and 31.

**CYDOSIA MAJUSCULA** Hy. Edwards (Plate VII, 18)

Bilaterally asymmetrical, claspsers similar in shape but the left member larger, enlarged near base, constricted in distal third, apex rounded, clothed with scattering spines, a few scattered spines over rest of surface; harpe falcate, arising from an enlarged base, curved over costal margin, then back over ventral margin in a broad curve, apex with a tooth and several spines; a short conical process arising from clasper just distal to harpe-base, this may be the superior process; a finger-like process arising just approximated to harpe-base, curved toward costal margin, apex spiculate; left clavus long, stout, incurved, apex obtuse; right clavus short, conical, apex rounded. Base of tegumen broadly rounded, heavily selerotized. Peniscus becoming considerably developed dorsally. Urethra stout at basal half, distal half slender, curved back upon basal portion, apex slightly hooked.

Clasper (left) 2 mm.

The interesting male genital armature of this little moth is extremely selerotized and it is very difficult to make it lie flat upon a slide for microscopical examination. The terminology I have used here may not be agreeable to other workers, but due to the complicated structure it is very difficult to give any but an arbitrary terminology.

**LOCALITY RECORDS:**

This small black moth, while never common, is often present in light trap collections at State College during the middle of June.
HOBOLIA BRIMLEYANA Dyar (Plate VII, 13)

Clasper ovate, slightly swollen near center, apex rounded, entire structure clothed with hairs and scattered spines; harpe a rounded, setigerous prominence located in the distal area of clasper. Base of tegumen more or less pointed apically. Penisculus weak, a few spines on inner margin near base of clasper. Uncus weak, curved, setigerous, apex beaked.

Clasper 1 mm.

LOCALITY RECORDS:

Record from one specimen taken at State College on September 27.

AMYNA OCTO Guanée (Plate VII, 14)

Syn. crista Morrison, testa Grote

Clasper narrow at base, costal margin expanded to a point near center, apex narrowly rounded; costal apex set with one strong, and several weak spines; area along distal ventral margin clothed with large flattened hairs which have their spines recurved; basal costal margin folded over, clothed with setae; remainder of clasper with scattered setae; harpe short, blunt, inner margin irregular; editum produced, rounded, spiculate; elavus obsolescent. Base of tegumen broadly rounded, often somewhat emarginate. Penisculus well developed, dorsal portion rounded, clothed along lateral margins with heavy, spatulate scales having comb-like spines. Uncus stout, curved, apex acute, dorsal surface setigerous.

Clasper 3 mm.
LOCALITY RECORDS:

Record from three specimens collected at State College on September 15 and October 6 and 10.

CHAMYRIS CERINTHA Treitschke (Plate VII, 15)

Clasper tapering toward apex, apex surmounted by a spatulate process, numerous marginal spines along ventral margin and a few along costal margin; a thick vestiture of hair on inner surface between base of harpe and costal margin, scattered setae over remainder of clasper; harpe arising from ventral portion, stout, incurved, undulate near apex, apex hooked; ectum absent; elavus obsolete. Base of tegmen narrowly rounded. Penis-lus moderately prodused, rounded near base, vestiture of hair. Juxta rounded on posterior portion, anterior margin excised. Uncus curved, gently tapering toward apex, apex hooked, spinate.

Clasper 2.5 mm.

LOCALITY RECORDS:

Record from thirteen specimens taken at State College from early April to the middle of July.

LITHACODIA MINTA Grote & Robinson (Plate VIII, 1)

Clasper broad at base, tapering toward apex; apex incurved and narrowly rounded, set with several short and two or three long spines; sacculus well developed, costal margin of sacculus with scattered spines set
on slight prominences; harpe arising from discal area of clasper, slender, straight, apical area set with spinules; clavus and editum absent; peniculus well developed, produced and rounded at base, clothed with slender, pointed scales; uncus stout, curved, apex somewhat beaked, spinate.

Clasper 1 mm.

LOCALITY RECORDS:

Record from eleven specimens collected at Como, Starkville, State College and Trimmee during May, June and July.

LITHACODIA CARNOLIA Guenée (Plate VIII, 2)

syn. biplena Walker

Clasper with margins sub-parallel, gently incurved, basal portion slightly narrower than the distal portion, apex rounded, vestiture of hairs and scales becoming more pronounced in discal area, marginal spines on ventral margin; harpe arising from apex of sacculus, stout, only slightly curved, apex moderately hooked; corona a short row of stout spines extending at an angle to apex of claspar; editum absent; clavus obsolete. Base of tegumen with apex produced and process-like. Juxta rectangular with a median incision. Peniculus produced, rounded, hairy. Uncus stout, curved near base, apex acute and slightly hooked, clothed with numerous setae.

Clasper 2.25 mm.

LOCALITY RECORDS:

Comparatively common at the State College light trap during June and early July. One specimen taken at Como on July 30.
LITHACODIA APICOSA Haworth (Plate VIII, 5)

Syn. nigritula Guenée, undatifera Walker

Clasper slender, margins sub-parallel, apex rounded, gently insurved, costal region clothed with spines becoming heavier on apical portion, ventral margin with scattered spines of various sizes; harpa arising near ventral margin, insurved, apex slender; sacculus clothed with spines; elavus obsolescent, editum absent. Base of tegumen drawn to a rounded apex. Juxta with lateral margins parallel, anterior margin rounded, posterior margin excavated. Peniculus slightly produced, weak, hairy. Unus short, stout, obtuse, spinate.

Clasper 2.75 mm.

LOCALITY RECORDS:

Recorded from Como, Longview and State College. It is usually common at lights. There are evidently several generations as it has been taken from April to September.

LITHACODIA INDETERMINATA Barnes & McDunnough (Plate VIII, 4)

Clasper wider and shorter than in L. apicosa Haworth, gently insurved, apex obtuse, inner surface clothed with hair, corona absent, a few marginal spines along ventral margin; harpa arising from apex of sacculus, stout, slightly angled near base, short, gently tapering toward an acute apex; editum obsolescent; elavus only slightly produced, rounded, denticulate. Base of tegumen having apex produced. Peniculus produced near base, angled, clothed with long hair. Unus strongly curved near base, apex
acute, clothed with scattering hairs.

Clasper 2 mm.

LOCALITY RECORDS:

Record from three specimens collected at State College on July 16 and 25.

XANTHOPTERA NIGROFIMBRIA Gueneé (Plate VIII, 5)

Clasper broad at base, apical region narrow; a broad, acute, spinate, process from costal margin near apex; a beak-like process from costal angle; apical portion with scattered spines; a blade-like extension from discal area parallel to costal margin; editum and clavus absent. Base of tegumen greatly produced anteriorly, apex narrowly rounded. Peniculus weak. Uncus weak, clavate before apex, apex obtuse, spinate.

Clasper 1.6 mm.

LOCALITY RECORDS:

This little moth is common over most of Mississippi. It is collected almost every night at the light trap at State College from April to September.

CRYPHIA VILLIFICANS Barnes & McDunnough (Plate VIII, 6)

Clasper with costal margin produced near middle; apical portion clavate, excurved, set with slender spines; discal area with slender spines or hairs; sacculus greatly produced, extending to apical lobe of
elasper, apex obtuse, spinate; costal margin of sacculus near base produced, rounded, more acute on right than on left member; a rounded, spinate tuberole in discal area. Base of tegumen broadly rounded, obscurely pointed. Penisulus rounded near base, bearing a few scattered setae. Unus stout, curved, apex obtuse and hooked, spinate.

Clasper 1.5 mm.

LOCALITY RECORDS:

Record from three specimens compared with types in the Barnes Collection. Specimens collected at Starkville on July 9 and August 7.

HELIOMETIA APICELLA Grote (Plate VIII, 7)

Syn. truncatula Zeller, ascepta H. Edwards

Clasper short, stout, margins sub-parallel, produced into a rounded apex at costal angle, ventral angle of left clasper slightly produced, ventral angle of right clasper rounded; costal area thickly clothed with hair, ventral margin with spines; a process arising from apical margin of clasper, produced upward; apex acute, this structure may be a modified ampulla; harpe from discal area, directed toward costal margin, short, stout, obtuse, apex denticulate; sacculus well developed, left sacculus bearing a stout process on its costal margin which is rounded and spiculate; right sacculus rounded and bearing no such structure. Base of tegumen broadly pointed. Penisulus weak, base rounded, bearing few hairs or setae. Unus mandibulate, asphium thickly clothed with hairs, unus curved, apex slightly hooked, spinate.

Clasper 2 mm.
LOCALITY RECORDS:

Record from four specimen collected at the State College light trap on June 1 and 6, August 51 and September 1. This interesting little moth is comparatively rare.

SPRAGUE LAEO Ouenée (Plate VIII, 8)

Genital structure not bilaterally symmetrical. Clasper short, margins sub-parallel, apex more or less truncate, corona a row of stout spines along apical margin, marginal spines on both costal and ventral margins. Left clasper: pollex present, arising near ventral margin, short, excurved, apex acute, heavily sclerotized; harpe produced beyond costal margin, clavate, five or six conical teeth near apex; sacculus strong, a finger-like process extending upward from apex. Right clasper: pollex absent; harpe short, rounded, not reaching half way from its base to the costal margin, apical region set with five or six conical teeth; sacculus strong, not bearing process as in left member, short spines on costal margin. Base of tegumen rounded, only slightly pointed. Juxta triangular. Peniculus weak. Uncus mandibulate, scaphium with an area of slender spines on either side, uncus curved near base, apex hooked.

Clasper 1.75 mm.

LOCALITY RECORDS:

Recorded from Cemó, Kola, Longview and State College. A moderately common species from May to early August.
SPRAKULIA DAMA Guama (Plate VIII, 9)

Syn. trifariana Walker, transmutata Walker, paralia Grote

Like S. les Gm. the genital apparatus is not bilaterally symmetrical. General structure similar to the other species; pollex on left clasper as in S. les Gm., but more obtuse than in that species; left harpe shorter than in the other species, not distinctly clavate, eight or ten short, conical teeth; right harpe resembling that of S. les; left sanctus only slightly produced near apex on costal margin, spiculate; right sanctus considerably produced near apex on costal margin, this process rounded and spiculate. Edital obsolete.

Clasper 1.6 mm.

LOCALITY RECORDS:

Record from numerous specimens taken at State College. A rather common species during May, June, July and August.

TARACHIDIA ERASTRIOCIDES Guama (Plate VIII, 10)

Clasper with margins sub-parallel, slender in middle portions, apical portion expanded and rounded, corona a row of spines along ventral angle, spines along both margins; harpe arising from disto-ventral region, somewhat exsurved, apex slender and acute; sanctus strong, rounded, setigerous; edital and elevus absent. Base of tegumen rounded, apex with a small process. Juxta sub-triangular. Penisculus weak, hairy. Unusus mandibulate, scaphium (not illustrated) with a hairy area on each side, unusus curved, setigerous, apex beaked.
Olaspdr S Bigi

ixmuT?

msommt

A ooranoa speales at the State College light trap there are probably
two generations since it is common during late June and again in late Au-
gust.

TARACHIDIA CANDEFACTA Hübner (Plate VIII, 11)

Syn. debilis Walker

Clasper heavy at base, moderately slender near center, apical por-
tion expanded, and rounded, spines on inner surface and on both margins,
corona absent; sacculus strong, rounded, setigerous; harpe arising from
disto-ventral area, short, stout, apex obtuse. Base of tegumen with apex
produced into a small process. Juxta with anterior margin produced into
a process, posterior margin emarginate. Peniculus strong, hairy. Ussus
curved, spinate, apex beaked.

Clasper 2.2 mm.

LOCALITY RECORDS:

The most common species of this genus at State College. It is abun-
dant in light trap collections during May and June, a few specimens have
been taken as late as September.
TARACHIDIA SEMIFLAVA Guenée (Plate VIII, 12)

Clasper with margins sub-parallel, costal margin somewhat produced near middle, apex rounded, marginal spines on both margins, clothed with hair in outer portions; corona a row of slender spines; harpe from a broad base near ventral margin, stout, moderately insurved, apical portion blade-like; sacculus strong, tapering toward apex; editum and clavus obsolete. Base of tegumen having apex slightly produced. Jutxa with posterior margin emarginate, anterior margin produced in the center. Peniculus poorly developed. Uncus mandibulate, asaphium broader at apex, spinate along lateral margins, uncus curved, weak, spinate, apex hooked.

Clasper 2.3 mm.

This moth is very easily recognized by the fact that the distal half of the primaries is dark brown while the inner half is lemon yellow.

LOCALITY RECORDS:

Recorded from Columbus and State College. The adult appears at light from late April through July.

TARACHE APRICA Hübner (Plate VIII, 13)

Syn. biplaga Guenée

Clasper with margins sub-parallel, costal margin near apex slightly insurved, ventral angle rounded, corona a row of stout spines along apical margin, a few scattered spines before apex, clothed with hair; harpe arising near ventral angle, short, insurved, stout, apex acute; sacculus strong, linear, apex rounded; editum obsolete; clavus produced, finger-

Clasper 3 mm.

LOCALITY RECORDS:

Recorded from Columbus and State College. It is a common species during late April, May and June. A few specimens have been collected as late as early September.

MARATHYSSA INFICITA Walker (Plate VIII, 14)

Syn. histrio Grote

Clasper tapering toward apex, apex expanded and produced on costal angle; a large, slightly clavate process extending from ventral angle far beyond apex of clasper, spinate, apex rounded, this structure may be an exceptionally well developed pollex; sacculus moderate, with a few scattered setae; editum obsolescent; clavus absent. Base of tegumen large, apex abruptly truncate, apical margin slightly produced at the center. Peniculus hairy, not produced. The author has been unable to determine the exact structure of the uncus, due to the limited material at hand. It is not illustrated.

Uncus 1.3 mm. (pollex not included).

LOCALITY RECORDS:

Record from one male collected at Ocean Springs on August 10.
PARETES OCUILATR IX Guanée (Plate VIII, 15)

Clasper short, broad, an incision near ventral angle, apex rounded and spinate; discal area clothed with long, thick hairs; ventral margin clothed with hairs and spines; sacculus strong, produced apically into a broad incurved process - the harpe; apical portion spinate; aditum and clavus absent. Base of tegumen large, narrowly rounded apically. Juxta with posterior margin truncate. Peniculus moderately produced, with a few setae. Unsus stout, apex beaked; a large conical structure arising dorsally from near base of unsus, finely spinulate, base surrounded by hairs and spines. This structure seems to be peculiar to this group of moths. Its function, as in the case of many other parts of the genital armature, is obscure.

Clasper 1.75 mm.

LOCALITY RECORDS:

Moderately common at State College during May and June.

PARETES AEROSTLOIDES Guanée (Plate IX, 1)

Syn. prodneta Walker

General structure similar to that of P. oculatris. Apex of clasper more narrowly rounded, set with one or two long spines, and numerous spinules. Harpe arising nearer base than in P. oculatris, apex of harpe more acute, basal portion set with thick hairs and slender spines. In the illustration sacculus and harpe have been bent outward so as to lie flat on the slide. Conical process curving, apex beaked, dorsal surface set
with slender spines. Urosus more stout than in the former species, apex slightly hooked or beaked. Juxta with posterior margin straight, anterior margin rounded, posterior portion denticulate. Base of tegumen with apex acute.

Clasper 2 mm.

LOCALITY RECORDS:

This is the more common of the two species of *Paecetes* found in Mississippi. It appears during all the summer months from April until September.

**HAILEYA DORMITANS** Guenée (Plate IX, 2)

*Syn. latebricola* Grote

Clasper with a large, spatulate process arising from costal margin at base, apical portion of this costal process thickly clothed with ventrally directed spines; clasper broad, apex unevenly rounded, disoal area thickly clothed with spines, corona absent; harpe arising near base-ventral margin, gently curving, slender, produced toward apex of clasper; apex of left harpe more acute than right; clavus and editum absent. Base of tegumen drawn to a rounded apex. Juxta produced into a slender process anteriorly. Peniculus produced into a rounded basal lobe, a few setae. Urosus sigmoid, apex acute, spicate.

Clasper 2.5 mm.

LOCALITY RECORDS:

Record from three specimens collected at State College on July 4, 22 and August 10 and from two specimens taken at Cedar Bluff on May 31 and
GENUS CATOCALA SCHRANK

The genitalia of the Catocala moths naturally are very large and are heavily sclerotized. The tegumen or basal ring to which the claspers are attached is compressed laterally so as to bring the bases of the claspers together where they are joined. This union makes dissection very difficult. Almost all of these genitalia are bilaterally symmetrical in some respect. In C. piatrix Orb., C. robinsoni Grt., C. scrippina Stkr., C. viduata maastoa Hist., and C. spiona Drur., the costal thickening is more pronounced in the right clasper and this thickening extends beyond the apex of the clasper for a greater or less degree. This characteristic seems most evident in C. robinsoni Grt. In all the Catocala moths anscusculus embraces the entire basal portion of the clasper, and the harpe arises from its distal portion near the costal margin. The two harpes may be similar or they may be slightly different. There is considerable individual variation in this respect. In all cases juxta is composed of two sclerites more or less triangular in shape and set with their inner points pointing posteriorly. The uncus is mandibulate in all cases. The pubescence of the uncus is reduced or absent and the apex is more often beaked than actually hooked.
CATOCALA DIATRIX Grote (Plate IX, 3)

Basal portion of clasper heavily sclerotized, distal portion expanded and not heavily sclerotized; left clasper with apex produced at ventral angle into a triangular process, costal angle slightly produced; right clasper with a wide process from ventral angle, apex of process square; a sclerotized ridge extending parallel with costal margin; both claspers clothed with long hairs and a few scattering spines, a group of stout spines along ventral angle near base of harpe; sacculus strong, harpe arising from its apical portion; harpe stout, excurved, apex of left harpe rounded; apex of right harpe slender, longer than left member and with its apex slightly spatulate. Base of tegumen with apex pointed. Peniculus weak, moderately hairy. Uncus mandibulate, curved, setigerous.

Clasper 8 mm.

LOCALITY RECORDS:

This species has been taken at Elizabeth and State College during August.

CATOCALA EPIONE Drury (Plate IX, 4)

Left clasper with apical portion expanded, weak, a triangular process from costal angle, a rounded prominence at ventral angle, right clasper similar but costal thickening extending beyond apex seems to form a small rounded process; this process is clothed with hairs and spines. Both claspers clothed with long hair; spines along ventral margin near base of harpe; harpe stout, setigerous, excurved, apex obtuse. Base of tegumen
rounded. Penisculus strong, setigerous. Uncus mandibulate, stout, curved, apex hooked.

Clasper 5.5 mm.

LOCALITY RECORDS:

Record from four specimens taken at State College on April 1, June 6, August 8, and at Longview on June 5.

CAROCALA ROBINSONI Grote (Plate IX, 5)

Clasper expanded beyond sacculus; apex of left clasper with a triangular process from ventral angle, costal angle rounded; right clasper with costal thickening extending considerably beyond apex, the apex of this process is rounded; both claspsers clothed with hairs, spines along ventral margin and distal portion of sacculus; sacculus strong, an oblique carina near middle; harpe arising from sacculus, excurved, stout, slightly enlarged near middle, apex obtuse. Base of tegumen narrowly rounded. Juxta divided at center into two sub-triangular sclerites. Penisculus weak, hairy. Uncus mandibulate, slender, curved, setigerous, apex hooked.

Clasper 6.5 mm.

LOCALITY RECORDS:

Record from one specimen taken at State College in September 1896 by H. E. Weed.
CATOCALA AGRIFFINA Strecker (Plate IX, 6)

Glaespers similar, costal thickening of right claspsr only slightly more pronounced than left; costal margin excurved; apex produced to a pointed process extending beyond expanded portion; claspers clothed with hair and scattering spines, numerous spines along ventral margin near sacculus and on distal portion of sacculus, stout, excurved, apex obtuse.


Clasper 8 mm.

LOCALITY RECORDS:

Uncommon at State College during June and July.

CATOCALA VINDUATA Guenée (Plate IX, 7)

Syn. maestosa Hulst, moderna Grote, guenii Grote

Apical portion of claspers dissimilar; apex of left claspsr slightly produced, acute; apex of right claspsr with costal thickening extending beyond claspsr, this process slightly recurved, apex narrowly rounded; both claspers clothed with hairs and scattered spines; a group of spines along ventral margin near and including a portion of sacculus; sacculus strong; harpe arising from distal portion of sacculus, stout, excurved, slightly enlarged before apex, apex rounded; right harpe slightly thinner than left; a raised carina along base of harpe. Base of tegumen broadly rounded. Juxta divided at center into two triangular selerites. Peniscu-
lus weak, slightly pubescent. Uncus mandibulate, setigerous, curved, apex beaked.

Clasper 10 mm.

LOCALITY RECORDS:

This species has been reported from Cuevas, Gulfport, Heidelberg, Hickory, Neely, Ocean Springs, Pass Christian, Sherard and Starkville. Records indicate that it is most common during April, May, June and early July.

There are reports of a *Catosala* which undoubtedly refer to the present species from Agricola, Arena, Biloxi, Clyde, Crystal Springs, Elizabeth, Gulfport, Hernando, Keesole, Leakesville, Lucasdale, Magee, Moss Point, Mount Olive, Picayune, Toomsoba, Tupelo and Verona.

HOST PLANTS:

There have been almost fifty reports of the larvae of this species damaging pecans. It appears to be most abundant in the Gulf Coast area. At times young pecans trees have been almost completely stripped of their leaves and often killed. The damage to older trees appears confined to a few branches, and is not often serious. It has also been reported feeding on various shrubs. This is the most common species of the genus in Mississippi.

*CATOCALA BRISKIEI Edwards* (Plate IX, 8)

Apical portion of claspers similar, produced, acute; clasper clothed with hair and scattering spines; sacculus slightly produced along ventral margin beyond main portion, this structure spinate; sacculus strong, harpe
from its distal portion; harpe with expanded base, apex rounded, left harpe slightly longer than right. Base of tegumen narrowly rounded. Juxta divided at center into two narrow sclerites. Peniculus weak. Uncus mandibulate, base slightly enlarged, apex beaked.

Clasper 8 mm.

LOCALITY RECORDS:

Glenn W. Herrick collected one specimen of this moth at State College on May 17, 1902.

CATOCALA CARA CARISSIMA Hulst (Plate IX, 9)

Syn. sylvia Hy. Edwards

Apical portion of claspers similar, apex of right clasper slightly more acute than left, both claspers clothed with long hair and scattered spines; numerous spines along ventral margin near and including a portion of sacculus, costal area of both claspers with a wide costal thickening; sacculus strong; harpe from distal portion of sacculus, base broad, apical portion stout, apex rounded; a longitudinal, spinate carina near base of harpe. Base of tegumen laterally compressed. Juxta divided at center into two curved, slender sclerites. Peniculus weak, hairy. Uncus mandibulate, setigerous, apex beaked.

Clasper 7 mm.

LOCALITY RECORDS:

This species was first collected in Mississippi in June by H. E. Weed at State College. Recent records indicate that it is most common during July.
CATOCALA AMATRIX F. SELECTA Walker (Plate IX, 10)

Apex of right clasper more acute than left, claspers similar in other respects; wide costal thickening; claspers clothed with hairs and a few weak spines especially along costa; numerous long spines on ventral angle of sacculus; sacculus strong, terminated by the harpe; harpe stout, apex enlarged, rounded, setigerous; a longitudinal, spinate carina near base of harpe. Base of tegumen laterally compressed, rounded when spread apart. Juxta divided into two sub-triangular sclerites. Peniculus moderate, hairy. Unites mandibulate, central portion straight, setigerous, apex beaked.

Clasper 7 mm.

LOCALITY RECORDS:

Record from two specimens collected at State College on August 7 and 15.

CATOCALA ILLECTA Walker (Plate IX, 11)

Syn. magdalena Strecke

Apical portion of claspers similar, apex of right clasper slightly more produced than left; costal thickening about equal in both claspers; claspers clothed with hairs and weak spines; a group of spines along ventral margin near and including a portion of sacculus; sacculus strong; harpe arising from distal portion of sacculus, base broad, harpe slender, apex rounded, a blade-like projection arising from inner surface; a longitudinal carina near base. Base of tegumen laterally compressed, rounded when opened. Juxta divided at center into two slender sclerites.
Penisculus moderate, spinate. Uncus mandibulate, setigerous, apex beaked.

Glasper 6.5 mm.

LOCALITY RECORDS:

Two specimens of this species have been taken in Mississippi, one on May 5, 1904 by Glenn W. Herrick, and one by the author on June 12, 1931. Both specimens collected at State College.

CATOCALA AMICA Hübner (Plate IX, 12).

Syn. lineola Grote

Apical portion of claspers drawn to slender points; claspers clothed with long hair; a group of spines on ventral margin near distal portion of sacculus; sacculus strong; harpe arising from sacculus, long, slender, apex elavate, curving over costal margin near base, recurved beyond costal margin. Base of tegumen with apex acute. Juxta divided into two sub-triangular selerites. Penisculus weak, hairy. Uncus mandibulate, crescentric, apex beaked.

Glasper 4.5 mm.

LOCALITY RECORDS:

The record for this species is from four specimens collected at Longview on June 22 and 26, Starkville on July 18 and at State College in June 1896.
ALLOTRIA KLONYMPHA Hübner (Plate IX, 13)

Clasper broad at base, tapering toward apex; right clasper with apex narrow, produced, spiculate and spinate, costal margin bearing three processes; distal process short, weak, spinate; the other two finger-like and spinate; apex of left clasper foot-like, spiculate; triangularate process from costal margin near base, spiculate; a blade-like process arising just below the triangularate process, set with spines; harpe arising near ventral margin, only slightly produced on right clasper, produced even less on left clasper. Base of tegumen rounded, apex slightly pointed. Juxta excavated on anterior margin, posterior margin heavily sclerotized. Penisculus strong, rounded, hairy. Umsus stout, tapering toward apex, spinate, apex beaked.

Clasper 5.25 mm.

LOCALITY RECORDS:

Recorded from Cedar Bluff, Columbus and State College. It has been collected from March 2 to July 18.

CAENURGIA CONVALESCENS Guanée (Plate IX, 14)

Syn. acorna Walker, purwata Walker

Clasper and armature similar. Clasper broad in basal portions, apex tapering, rounded, ventral margin only slightly curved, costal margin curving downward beyond middle, numerous marginal spines, especially around apex; ampulla arising near apex, large, strong, excurving, spinate; a spinate carina between base of ampulla and ventral margin; discal area thickly

Clasper 3.75 mm.

LOCALITY RECORDS:

It has been collected at Columbus and State College, and is rather common during May, June and July.

CAENURGIA GRASSIUSCULA Haworth (Plate IX, 15)

Syn. erichtho Guemée

General shape of claspers similar. Apex of left clasper more produced and narrow, apical portions of both members spinate. The armature of the claspers is extremely heavy, stout, out of proportion, and dissimilar in the two claspers. Right clasper: costal area thickened, thickening produced beyond apex into a stout, pointed process; ampulla arising near apex, stout, tapering toward an obtuse apex, exscurving, spiculate; harpe arising from discal area from a broad base, thickly spinate, rapidly tapering to a stout, recurved apex; a large lobe-like process arising near base of harpe, thickly spinate, rounded, this may be either the editum or the clavus. Left clasper: costal margin more curving than in right member, costal process exscurved; ampulla more nearly straight, spinate on ventral side; harpe arising from a much narrower base than in the case of the right member, more slender, incurved, spinate, apex acute; flap-like process absent.
Base of tegumen laterally compressed, apex acute. Penisculus weak, hairy. 
Uncus mandibulate, curved, spinate on dorsal surface, apex raptorate.

Clasper 4.75 mm.

LOCALITY RECORDS:

This is a common moth in all sections of Mississippi. It may be collected during all the spring, summer and fall months, and often during warm periods in the winter.

PHILAMIA LATIPES Guenee (Plate X, 1)

Syn. texana Morrison, perforata Walker, indentata Harvey repanda Fabricius

Claspers and armature similar. Clasper broad, apex rounded, ventral margin produced near center, long spines scattered over the entire structure; ampulla more or less foot-shaped with the "heel" rounded and extending beyond apical margin, "toe" slender, pointed, extending well over ventral margin; harpe arising in distal area, stout, excurved, spinulate, apex obtuse; editum produced, conical, spinate; a minute, rounded, spinate process situated between base of ampulla and ventral margin. Base of tegumen rounded. Juxta with dentate margin. Penisculus weak, hairy. Uncus mandibulate, curved, spinate, apex raptorate.

Clasper 4.25 mm.

LOCALITY RECORDS:

Record from four specimens taken at Gulfport on June 27 and at State College on April 3 and June 17.
PHURY; LIMA Guenée (Plate I, 2)

Syn. dissocia Walker, dissoicium Walker

Clasper broad, apex rounded, a slight constriction just before apex, long spines from apical and ventral margins; harpe (or ampulla) arising near apex, stout, excurved, setigerous, apex beaked; saculus strong, apex extending toward apex of clasper as a thickening, apex spinate; clavus arising near base of saculus, rounded, base set with long spines; apical portion of clasper set with short spines. Base of tegumen narrow. Juxta with an arm projecting from each posterior corner. Penisculus moderate, hairy. Uncus mandibulate, stout, swollen near apex, spinate, apex raptorate.

Clasper 2.5 mm.

LOCALITY RECORDS:

Seven specimens examined from State College. These were all collected during August and September.

CHLITHEA FRUCTULUM Guenée (Plate I, 3)

Syn. dissoicium Walker, elongatus Grote

Clasper moderately slender, apical portion expanded and bent downward, scattered spines on apex but no corona, harpe (or ampulla) arising near ventral margin, stout, setigerous, excurved beyond ventral margin, apex beaked; apex of extension of saculus free, spinate; saculus strong, spinate. Base of tegumen narrowly rounded. Juxta with stout teeth-like processes. Penisculus weak, hairy. Uncus mandibulate, swollen before apex,
spinate, apex rapturate.
Clasper 5 mm.

LOCALITY RECORDS:

Record is from three specimens collected at State College. Two on June 17 and one in August 1896.

AYSTROSTROGIS ANILIS Drury (Plate I, 4)

Syn. sesquistriaris Hübner

Clasper and armature dissimilar. Right clasper: clasper short, apex narrowly rounded, spinate, apex of saeculus produced, expanded, reaching over costal margin, spinate; harpe arising from costal margin, strong, ex- curved, reaching far beyond apex of clasper; an inferior process from base of harpe, slender, insurved, setigerous. Left clasper: clasper similar in general shape to right member but a little shorter; harpe arising from costal margin, stout, foot-shaped, rounded, inferior process similar to that on right harpe; apex of saeculus not as greatly expanded as on right. Base of tegumen obtuse, apex narrowly rounded. Peniculus rather weak.

Uncus mandibulate, stout, thickly spinate, obscurely beaked.

Clasper 2.25 mm.

LOCALITY RECORDS:

A moderately common species at the light trap at State College. Spec- imens have been examined from Cedar Bluff, Come and Gulfport. It is most abundant during May and June, but specimens are often collected later than this.
ZALE LUNATA Drury (Plate I, 5)

Claspers and armature extremely dissimilar. Right clasper: a stout excurved process arising from apex of clasper, this process as long as remainder of clasper, its apex slightly clavate, an inferior process from the above extension before apex, apex of inferior process spinate; harpe (?) arising from surface of sacculus, extending beyond ventral margin and then curving toward the clasper extension, apex bi-lobate; sacculus strong, posterior margin rounded. Left clasper: extension of clasper much shorter than right, bent outward at a right angle near base, apex set with two stout teeth, spinate; harpe (?) apparently replaced by a lobe-like structure with rounded margins; sacculus much weaker than right member. Base of tegumen broadly rounded, short. Juxta excavated on posterior margin. Peniculus moderate. Unus stout, sharply curved at base, spinate, apex hook-ed.

Claspers: left 4.75 mm., right 6.5 mm. (including clasper extension).

The genital structure of this species is extremely interesting and unusual. If what I have termed an extension of the clasper is actually such, then the inferior process should be called the pollux.

LOCALITY RECORDS:

This is a common moth at State College. It has also been collected at Columbus and Mason. It seems to be most common during late summer.
ZALE LUNIFER A Hübner (Plate X, 6)

Syn. linceola Walker

Claspers similar. Apex of clasper produced into a curving process, basal portion curving inward and then abruptly outward, apex slightly expanded and bilobate, posterior lobe longer and thickly spinate; a small, spinate tuberole in discal area of left clasper; all other armature wanting except for a few spines. Base of tegmen narrowly rounded. Juxta shaped like the wings of a butterfly. Penisculus weak. Unsus stout, curving, setigerous, apex with an incurving process.

Clasper 5 mm. (including clasper extension).

LOCALITY RECORDS:

Only two specimens of this species have been collected at State College by the author. These were taken on March 2 and June 8.

ZALE OBLICUA METATA Smith (Plate X, 7)

Claspers dissimilar. Right clasper with apical extension slender, abruptly incurved near apex, apex slightly expanded, entire extension and apical portion of clasper spinate, a rounded, produced area on base of extension, a wide spinate process with irregular margin produced inward toward base of penisculus, no other armature. Left clasper with extension only slightly incurved, apex enlarged with a small tooth-like projection; entire structure more or less spinate; a wide, thickly spinate process arising near inner costal margin and extending over it, spinate base of this process extending diagonally across discal portion of clasper and
MATIGRAMMA PULVERILINA Grote (Plate X, 9)

Clasper dissimilar. Right clasper broad, apex almost truncate, a small projection near ventral angle, costal margin straight, a triangulate, spine-like extension from costal margin of sacculus near apex; ditum a small setigerous area; left clasper with apex produced into a long, excurved, spine-like process having a blade-like expansion from its costal margin near apex, apex spine-like; sacculus strong, apex produced into a long extension curving toward apex of clasper extension, apex expanded, rounded, sacculus with costal margin slightly produced near base, spine-like. Base of tegumen broad. Penisulus weak. Uncus slender, apex obtuse, hooked.

Clasper 2.3 mm.

LOCALITY RECORDS:

This is a common species at State College. It is in flight from April through August. Specimens have also been examined from Cedar Bluff and Columbus.

CHARADRA DERIDENS Guanée (Plate X, 10)

Syn. cirrulifera Walker, contigua Walker

Clasper short, broad; costal margin rounded, incurved; sacculus produced beyond apex of clasper, apex rounded; harpe arising near base, greatly developed, stout, excurving beyond clasper apex, middle portion straight, apex acute. Base of tegumen broad, rounded. Penisulus narrow, hairy. Uncus stout, short, spatulate, spine-like on dorsal surface. Penis bearing heavily sclerotized teeth.
LOCALLITY RECORD:

October 2, 1861

The strike party, number of workers, Camp X.

The report of the special committee on the strike is as follows:

One proposition was submitted of strike at College on April 6.

LOCALLITY RECORD:

October 2, 1861

Camp X.
er, short, clavate, setigerous; clavus produced, slender, setigerous.
Base of tegumen long, broad, rounded. Peniculus rounded, broad, hairy.
Venus mandibulate, spinate, eygnate.

Clasper 3 mm.

LOCALITY RECORDS:

Two specimens examined, one taken at Mobile, Alabama and one at State College on August 15.

AUTOGRAPHA BRASSICAE Riley (Plate I, 13)

Syn. achimaeusis Behr.

Clasper comparatively slender, margins sub-parallel; apex slightly expanded, spinate and rounded, costal margin slightly produced near base; harpe arising near apex of sacculus, slender, curving in a circle toward costal margin; sacculus strong; clavus arising beneath sacculus, slender, finger-like, apex spinate. Base of tegumen slender, produced, apex rounded. Peniculus narrow, hairy. Venus slender, spinate, apex beaked, slightly produced on ventral side before apex.

Clasper 4.5 mm.

LOCALITY RECORDS:

This common pest is found in all section of the state, and records indicate that the larvae are found during all months of the year. Most of the adults examined were collected during June, July, August and November.
AUTOGRAPHA RILORA Stephens (Plate X, 15)

Claspers and armature similar. Clasper broad, tapering gently toward the narrowly rounded apex, several stout spines along ventral margin; apical area clothed with weak, inwardly-directed spines; harpe arising in or near discal area, produced diagonally toward costal margin, slender, apex elevate and setigerous, editum a setigerous area; clavus slender, weak, setigerous. Base of tegumen triangular. Penicusulus rounded, hairy. Uncus mandibulate, spinate, apex slightly hooked.

Clasper 2.75 mm.

LOCALITY RECORDS:

A common species at the State College light trap during the latter half of April. A few specimens have been taken later in the summer.

AUTOGRAPHA CO Grote (Plate XI, 1)

syn. praecotionis Guenée, synus Grote, culta Listner

Claspers and armature similar. Clasper broader in apical portions, apex rounded, corona an area of numerous, stout spines; numerous slender marginal spines; harpe extremely slender, arising in basal area and surving beyond costal margin, as long as the clasper, apex slightly elevate and setigerous; a short insurved costal process near base; clavus long, slender, excurved, apex rounded, setigerous. Base of tegumen produced into a long, slender process. Juxta evate, produced posteriorly. Penicusulus broad, rounded, hairy. Uncus rather slender, apical portions slightly larger than basal, setigerous, apex beaked or moderately hooked.
Glasper 3.65 mm.

LOCALITY RECORDS:

Six specimens of this species have been examined from State College which were collected during September. It has also been collected at Ocean Springs on August 21 and on Cat Island off the coast of Mississippi on September 7.

AUTOPHRA OU Guinée (Plate XI, 2)

Syn. *Insectella* Grote

Glaspers and antennae similar. Glasper becoming broader toward apex, apex more or less truncate with costal angle acute and ventral angle rounded, marginal spines along ventral and apical margins, discal area setigerous, costal area hairy; harpe absent; sacculus strong; clavus extremely long, slender, two thirds as long as glasper, apex setigerous. Base of tegumen with a lobe-like process, emarginate on anterior margin. Peniscus strongly rounded, hairy. Uncus mandibulate (not illustrated), moderately slender, setigerous, apex beaked.

Glasper 2.75 mm.

LOCALITY RECORDS:

This is a rather common species at State College. It has also been reported from Dahony, Natches and Tunica. The adult is most abundant during April, May and June.

HOST PLANTS:

It has been found feeding in the larval state on clover, cotton and
PIGIA AEREA Hibner (Plate XI, 5)

Gaspers and armature similar. Gasper broad, short, ventral angle broadly rounded, marginal spines from distal costal to approximal ventral margins; sacculus strong, apex produced slightly beyond ventral margin, apex obtuse; harpe arising in discal area, base broad, harpe short, stout, excurved, apex obtuse; clavus long, basal part slender, apex clavate and setigerous. Base of tegumen long, produced, apex rounded. Penisculus rounded, hairy. Urosus mandibulate (not illustrated), slender, setigerous, apex beaked.

Gasper 3.5 mm.

LOCALITY RECORDS:

Record from two specimens collected at State College on May 23 and in October.

RAPHIA AERIPTA Grote (Plate XI, 4)

Gaspers and armature similar. Gasper gradually tapering toward apex, ventral margin irregular; costal angle produced, pointed; entire structure clothed with scattered spines; harpe arising in discal area, tapering toward apex, reaching slightly beyond costal margin, a rounded blade-like extension from inner margin, giving it an ovate appearance; edutum not produced, spineate. Base of tegumen rounded. Juxta ovate. Penisu-
Chapter 6.5

...
I am pleased to report that the project has been completed on time. The reports have been submitted and are now available for review.

- The project was completed on schedule.
- The reports were submitted on time.
- The data collected was accurate and reliable.

In general, the project was successful and met all of the objectives set forth at the beginning.

- The project was completed on schedule.
- The reports were submitted on time.
- The data collected was accurate and reliable.

In general, the project was successful and met all of the objectives set forth at the beginning.

- The project was completed on schedule.
- The reports were submitted on time.
- The data collected was accurate and reliable.

In general, the project was successful and met all of the objectives set forth at the beginning.

- The project was completed on schedule.
- The reports were submitted on time.
- The data collected was accurate and reliable.

In general, the project was successful and met all of the objectives set forth at the beginning.
structure to uncss in *M. nigrescens* Ort. and *M. varzabilis* Barv.

*Glasper 4.3 mm."

**LOCALITY RECORDS:**

This species is rather common at State College. It is an early spring species, being most abundant from early March until late April.

**PANOPODA RUFIMARGO** Hübner (Plate XI, 11)

*Syn. grossoni* Grote

*Form carneaecosta* Guenée, *rubrigusta* Guenée

*Glasper and armature similar. Glasper with margins sub-parallel,* apical portion slightly broader, apex rounded, in *P. rufimargo* Hbn., and in the *form rubrigusta* Guenée, apex slightly emarginate in the *form carneaecosta* Guenée; marginal spines on both margins; sacculus weak, set with spinules; a thin-walled, sac-like structure attached to outside of glasper near center, this structure is flexible and probably capable of being extended with air from the tracheal system, its function may be to expel scent. Base of tegumen produced, apex rounded. *Jutta* sub-serrate. Penisulus weak. Uncus stout, apical portion enlarged, with a raised area extending diagonally along sides bearing short hairs, apex with a claw or beak with a lip-like extension beneath it, this structure is slightly different in the three forms as is illustrated in the drawings. This structure at the apex of the uncss has been termed a raptorate claw by some authors.

*Glasper size for all three is 3.5 mm.*
LOCALITY RECORDS:

These moths are never common. The form *gornaeosteta* Gbn. is probably more common than the other two; *P. rufimargo* Hbn. and the form *rubricepsta* Gbn. are usually collected during July and August while the form *gornaeosteta* Gbn. is usually taken during June.

ANTICARSIA GEMMATILIS Hübner (Plate XI, 9)

Claspers and armature similar. Clasper broad, ovate, apex broadly rounded, marginal spines on both margins; a row of stout, straight spines along center of clasper, more or less parallel with ventral margin; a densely spiculate area near base-costal margin; clavus attached along most of its length to base of clasper, one third of its length free and finger-like, apex spinate, a row of stout spines along basal portion. Base of tegumen broad, rounded. Penisculus rounded, hairy along ventral margin. Uncus arising from a produced base, short, finger-like, hairy, apex obtuse, set with a claw.

Clasper 2 mm.

LOCALITY RECORDS:

Record is from a single specimen collected at State College on October 6, and identified by Dr. J. McDunnough.
the horizon collected

taken at Long Beach in August and have been compiled with assistance in

only one appearance have been collected in Messenes.

LOCALLY RECORDED

Chapter 4.6, etc.

hardly, even perceived

read at home, perhaps. Though contemporaneously imagined, even imagined, and so on

I have compiled these stories, short, short, short, short, short, short, short, short

asbestos or poured concrete mass, each more or less apart, each covered with

the symptoms of various mass, many conceived, many conceived, many conceived, many conceived.

Chapter and summary edition. Chapter expanded edition, each
central lobe or process bearing a beak, spinate on dorsal surface.

Clasper 4.6 mm.

LOCALITY RECORDS:

Two specimens have been examined by the author, one taken at Baton Rouge, Louisiana on April 5 and one at State College, Mississippi on April 6.

HENDIS DERATHENS Walker (Plate XI, 18)

Syn. TRAPA Harvey

Claspers and armature similar. Clasper gradually tapering to a rounded apex, clothed with long hair, slender spines on apical region, ampulla much longer than harpe, stout, apical portion slightly incurving, apex rounded and setigerous; a rounded prominence near center on inner side halfway between ampulla and base of clasper, rounded, dome-like, setigerous; digitum rounded, spinate; elavus absent. Base of tegumen broadly rounded, apex slightly produced. Juxta expanded anteriorally into two lateral arms, posterior margin straight, corners slightly produced. Peniculus rounded, hairy. Unus mandibulate, curved, falcate, setigerous, apex pointed and bent inward.

Clasper 3 mm.

LOCALITY RECORDS:

This species has been recorded from Columbus, Como and State College. It seems most common during June and July. Specimens received from W. W. Stanley of Knoxville, Tennessee were taken during late August and early September.
BENDIS HINNA Geyer (Plate XI, 13)

Syn. pulverosa Walker

Claspers and armature similar. Clasper broad at base, tapering to a rounded apex, discal area hairy; sacculus strong, apex expanded along ventral margin and becoming a free, curved process near apex, a patch of slender scales near apex on ventral side. Base of tegumen rounded. Juxta consisting of four sclerites, two slender and two rectangular, the two slender ones situated between the other two. Peniculus strong, curved, hairy. Uncus mandibulate, falcate, setigerous, a process from its apex.

Clasper 3.2 mm.

LOCALITY RECORDS:

Only two specimens of this moth have been taken in Mississippi. These were collected on Cat Island off the Mississippi coast on September 8 and May 25.

EREBUS ODORA Linnaeus (Plate XI, 15)

Syn. agarista Cramer

Clasper broad at base, narrow at apex, apex rounded, costal margin produced, scattered spines near costal margin; sacculus strong, narrow, a reticulated area across sacculus near center; no other armature. Base of tegumen of two distinct parts weakly joined. Juxta broad, cordate. Peniculus strong, rounded. Uncus strong, stout, apex clymneate with crest produced and rounded, hairy.

Clasper 5 mm.
LOCALITY RECORDS:

Three specimens of this moth have wandered into Mississippi from the tropics. These were taken at Olra on June 11 and at State College.

HOST PLANTS:

It does not breed within the state.

NOROPSIS HIEROGLYPHICA Cramer (Plate XI, 14)

Syn. festiva Fabricius, algens Hübner, fustuosa Guanée

Claspers dissimilar. Right clasper: smaller, ovate, apex rounded, scattered spines; devoid of armature except a rectangular blade-like extension of sacculus from its costal side, spinate. Left clasper: greatly expanded in apical portions, a finger-like process from ventral angle, discal area with a few setae, spines along both costal and ventral margins; sacculus but little produced; devoid of armature. Base of tegumen broadly rounded. Penisulus strong, hairy. Uncus mandibulate, falcate, setigerous, apex beaked.

Claspers: left 3.2 mm., right 2.6 mm.

LOCALITY RECORDS:

This interesting species has been collected at Bay St. Louis, Biloxi, Gulfport, Hattiesburg, Ocean Springs and Starkville. Specimens examined were collected during July and August.

HOST PLANTS:

At Biloxi the larvae were reported as feeding upon weeds.
PLUSIODONTA COMpress-IPALPIS Guenée (Plate XII, 9)

Syn. insignis Walker

Clasper broad, apex rounded and with a short curved process; sacculus strong, broad, apical portion produced and thickly denticulate; the curved process at apex of clasper is probably the pollax; entire structure more or less devoid of spines. Base of tegumen rounded. Juxta long, basal portion broad, a triangular process arising from its ventral surface near base. Penisculus weak, rounded, hairy. Uncus stout, spinate, apex obtuse, with a slight beak.

Clasper 2 mm.

LOCALITY RECORDS:

This species is common at State College during May, June and July.

ALABAMA APGILLACRA Hübner (Plate XII, 16)

Syn. xylina Say, grandipuncta Guenée, bipuncta Guenée

Clasper ovate, apex rounded, weak, uniformly hairy; sacculus stronger, extending over costal margin or beyond ventral margin, apex narrowly rounded, entire structure with scattered spines; no other armature. Base of tegumen greatly produced, broad, apex emarginate. Juxta shield-like. Penisculus narrow, weak. Uncus mandibulate, broad tapering to a slightly curved, acute apex, setigerous.

Clasper 3 mm.

LOCALITY RECORDS:

This moth is common in all sections of Mississippi from late July.
until frost kills it. It spends the winter in the tropics and comes northward during the summer, reaching Mississippi in July.

HOST PLANTS:

This species is known as the cotton leaf worm and often does considerable damage, especially if it arrives early before the cotton is completely matured. The larvae are loopers and vary a great deal in color. Fields heavily infested are almost devoid of foliage. Eggs are deposited singly on the under side of leaves or sometimes on top of the leaves, and the young larvae feed on the more tender parts.

ANOMIS EROSA Hübner (Plate XII, 11)

Clasper narrow at base, expanded in distal portions, apex broadly rounded or in some cases slightly truncate, scattered spines over most of the surface; saeculus obsolete; a scent pouch from base of clasper. Base of tegumen broadly rounded. Juxta with posterior margin produced into two stout arms bearing some teeth near their rounded apices. Pениc-culus weak, narrow, curving. Uncus mandibulate, slender, curved, spinate, apex obtuse.

Clasper 2 mm.

LOCALITY RECORDS:

This species was collected at State College in October 1895 by H. E. Weed. It has also been collected at Durant on April 24.

HOST PLANTS:

This species is recorded as feeding upon hollyhocks.
ANOMIS FEMELIAGO Stephens (Plate XII, 12)

Syn. saryata Barnes and McDunnough

Clasper ovate, weak, hairy and spinate; sacculus strong, produced across costal margin, apex rounded and setigerous; a small prominence on costal margin near apex, a stout tooth in discal area; elavus (?) strong, greatly produced, apex incurved and knob-like. Base of tegumen broad, anterior margin truncate. Juxta thickly denticulate. Penisculus weak, narrow. Uncus mandibulate, short, base stout, apex spatulate.

Clasper 2.5 mm.

LOCALITY RECORDS:

Moderately common at State College during late summer.

HOST PLANTS:

The larvae are recorded as feeding in the pods of okra.

SOOLECAMPA LIBURNA Geyer (Plate XII, 18)

Clasper broad at base, distal portion slender, apex rounded, entire structure with scattered spines; harpe arising from base-costal area, basal portion produced and rounded on costal side, this area spinate, discal portion produced along costal margin of clasper, slender, apex acute, hardly as long as clasper. Base of tegumen rounded, divided at center. Penisculus weak. Uncus curved, spinate, apex beaked.

Clasper 3.8 mm.

LOCALITY RECORDS:

This species has been collected at Mason and State College during
all the summer months.

HOST PLANT:

The larvae are white borers found in rotting wood.

RIVULA PROPINQUALIS Guanée (Plate XII, 10)

Glasper narrow at base, expanded and rounded in distal portions, clothed with scattered hairs and spines; a small, raised, spinate prominence near basal portion. Base of tegumen rounded. Uncus curved, spinate, apex hooked.

Glasper 1.5 mm.

LOCALITY RECORDS:

Record from one specimen taken at State College on July 22.

PHIPROSOPUS CALITRICOIDES Grote (Plate XII, 3)

Syn. musataria Zeller

Glasper slender, margins parallel, apex rounded, distal half clothed with inwardly-directed spines, marginal spines along ventral margin; harpe arising near base, stout, spinate, apex obtuse and extending over costal margin; editum similar to harpe, produced, somewhat slenderer and shorter than harpe. Base of tegumen rounded. Peniculus strong, rounded and hairy. Uncus slender, curved, spinate, apex beaked.

Glasper 2.5 mm.

LOCALITY RECORDS:

Record from four specimens collected at Cedar Bluff, Ocean Springs, and State College during June and July.
PLEOECTYPTERA PERALIS GROMMSTRALLIS Grote (Plate XII, 13)

Syn. irraeta Walker, flocosalis Zeller

Clasper ovate, apex broadly rounded, stout marginal spines along ventral margin; sacculus produced below ventral margin into a stout, pointed process; harpe a trigonate process from discal area, apex rounded, basal portions spinate. Base of tegumen elongated, apex narrowly rounded. Penisulus narrow. Uncus slender at base, apex clavate, setigerous.

Clasper 2.5 mm.

LOCALITY RECORDS:

It has been collected at Ocean Springs, Sesums and State College.

Collections were made during June.

PLEOECTYPTERA HABITAS Walker (Plate XII, 14)

Syn. phalaenalis Grote

Distal portion of clasper expanded, rounded, numerous marginal spines; a slender process arising from sacculus near ventral margin; harpe short, stout, apex rounded; pollex weak, setigerous, produced toward apex of clasper. Base of tegumen drawn to a slender apex. Penisulus narrow, hairy. Uncus slender with apex clavate, setigerous.

Clasper .8 mm.

LOCALITY RECORDS:

This species has been collected at Cedar Bluff, Gulfport and State College during June and July.
PHYTOMETRA SEMIFURCUREA Walker (Plate XII, 15)

Syn. confinisalis Walker, rosalba Grote

Clasper broader at the center, apex drawn to a narrowly rounded point; thickly clothed with slender spines; harpe arising near disal area, short, curving, slender, apex more or less hooked. Base of tegumen rounded. Uncus mandibulate, falcate, spinate, apex acute.

Clasper 2.2 mm.

LOCALITY RECORDS:

Three specimens have been taken at State College on February 4, June 6 and during August.

PHALANOSTOLA LARENTIOIDES Grote (Plate XII, 4)

Clasper broader at center, apical portion excavated causing it to be bifid; vestiture of scattered setae; sacculus strong, narrow, costal margin set with setae. Base of tegumen broad, apex narrowly rounded. Penisculus broad, rounded. Uncus broader near apex, spinate, apex with a small beak.

Clasper 1.8 mm.

LOCALITY RECORDS:

Moderately common at State College from May to August.
METALISTRA DISCALIS  Grote  (Plate XII, 7)

Clasper with distal half weak and thinly sclerotized, slender, apex rounded, bearing scattered spines; sacculus strong, spinate, rounded; ed- itum greatly produced, stout, obtuse, apex thickly spinate, a stout spur at its base. Base of tegumen broadly rounded, hairy. Umbo with apical portion elavate, spinate, apex beaked.

Clasper 2.7 mm.

LOCALITY RECORDS:

Record from two specimens collected at State College during late August.

METALISTRA QUADRISIGNATA  Walker  (Plate XII, 8)


Clasper with apical portion narrow, basal portion broader; sacculus strong, spinate on inner surface; harpe arising in discal area, large, knob-like, thickly spinate, apex beaked.

Clasper 2.1 mm.

LOCALITY RECORDS:

This species has been collected at Columbus, Ocean Springs and State College during June and August.
EPIZEIXIS AMERICALIS Guenée (Plate XII, 2)

Syn. scriptipennis Walker

Clasper almost uniformly selerotized, apex rounded, costal margin produced near base; sacculus strong, apex produced over ventral margin and rounded. Base of tegumen produced and rounded. Uncus stout, setigerous, apex beaked.

Clasper 1.6 mm.

LOCALITY RECORDS:

Moderately common at State College and Columbus during August.

EPIZEIXIS LUBRICALIS Geyer (Plate XII, 1)

Syn. phasalis Guenée, suppressalis Walker

Clasper broader at base, costal margin heavily selerotized and produced beyond apex of clasper, this extension stout, recurved, acute; sacculus strong, produced beyond ventral margin, apex rounded and thickly clothed with short spines; no other armature. Base of tegumen produced, rounded. Peniculus rounded, hairy. Uncus stout, spinate, apical portion elavate, apex hooked.

Clasper 2.2 mm.

LOCALITY RECORDS:

It has been collected at Como, Perkinson and State College during June.
HORMIGA LITOPHORA Grote (Plate XII, 19)

Clasper slender; margins sub-parallel; apex produced, curved, spine-like; a rounded prominence near center of ventral margin which bears spines; numerous marginal spines along both margins. Base of tegumen produced, slender. Unus larger in distal portions, spinate, apex beaked.

Clasper 2.2 mm.

LOCALITY RECORDS:

Four specimens have been collected in Mississippi. These were taken at State College light trap on May 22, July 21 and August 7.

TETANOLITA MYKESALIS Walker (Plate XII, 17)

Syn. limalis Grote

Clasper entire in basal half; distal half divided into three parts; ventral process stout, apex obtuse; middle process broad, rounded, with a thumb-like process from its costal margin, not so highly sclerotized as other two; costal process longer, stout, apex narrowly rounded; ascusulus narrow, weak. Base of tegumen broad, produced, rounded. Unus stout, swollen near center, spinate, apex beaked.

Clasper 1.3 mm.

LOCALITY RECORDS:

This is a common species at State College. It has also been collected at Columbus and Ocean Springs. It appears at lights during all the summer months.
PALTHIS ASOPIALIS Guenée (Plate XII, 20)

Syn. insignis Walker

Clasper with apical portion slender, produced, apex acute; costal margin heavily sclerotized, produced beyond clasper apex; sacculus strong, narrow, produced beyond ventral margin, its apex obtuse, spiculate; costal margin of clasper produced and rounded near base. Base of tegumen broad, drawn to a narrow apex. Uncus narrow at base, setigerous, apex beaked.

Clasper 1.7 mm.

LOCALITY RECORDS:

This interesting little moth is relatively common at State College during August and September.

DERESETIS PYGMAEA Crote (Plate XII, 22)

Clasper slender, margins sub-parallel, apical margin excavated, setae along both margins, sacculus narrow, no other armature. Base of tegumen produced, slender. Uncus stout, slightly larger near center, apex hooked.

Clasper .8 mm.

LOCALITY RECORDS:

Only collected at State College. This specimen was captured at light on July 16.
SALIA interrupuncta Grote (Plate XII, 11)

Syn. saligae Zeller

Glasper broader in distal portion, apex rounded, inner surface spinulate; sacculus produced toward costal margin, slightly extended over this margin; no other armature. Base of tegumen drawn to a narrowly rounded apex. Penisculus rounded, hairy. Uncus slender, setigerous, apex slightly elevata and beaked.

Glasper 1.4 mm.

Locality Records:

This moth is rather common at State College. It has also been taken at Columbus and Como. Its period of greatest abundance is during May and June.

BOMOLOCHA BALTIMORALIS Guenée (Plate XII, 5)

Syn. benignalis Walker, laciniosa Zeller

Glasper broad, ovate, apical portion thickly spinulate; sacculus strong, costal margin slightly produced. Base of tegumen broad, slightly produced at apex. Uncus short, hook-like, apex acute.

Glasper 1.2 mm.

Locality Records:

It is not a common species. Only a few specimens have been collected at State College. These were taken during July and August.
These two species are very similar and are therefore treated together. Clasper broad, ovate, slightly longer in *B. madefactalis* Guenée; apex rounded, more narrowly rounded in the latter species; surface clothed with scattered spines; sacculus moderate, produced near its center, produced portion spinate. Base of tegumen rounded. Penisculus rounded, hairy. Umbo stout, setigerous, falcate, apex acute.

*Clasper:* *B. abalianalis* Walker 1.6 mm., *B. madefactalis* Guénée 1.8 mm.

**LOCALITY RECORDS:**

*B. abalianalis* Walk. This species has been recorded from State College during late July, August, and September.

*B. madefactalis* Guénée. Only a single specimen has been collected at State College. This was taken on July 22.

**PLATHYPENA SCABRA** Fabricius (Plate XII, 6b)


Very similar in general structure to the genus *Bomolocha*.

The costal margin is more heavily sclerotized, the clasper has an abrupt angle before the apex, and the costal margin of sacculus is emarginate. The clasper in general shape is shorter and broader than in the other species.
Olas per 1.5 mm.

LOCALITY RECORDS:

It is common in most sections of Mississippi. The moth is in flight from April to June.
BIBLIOGRAPHY

Barnes, W. W. and Lindsey, A. W.

Barnes, W. W. and Macounough, J.
Check list of the Lepidoptera of Boreal America. Decatur, Ill. 1917.

Beck, A. and Heinrich, G.

Cook, W. G.

Crampton, C. G.


Hyar, Harrison C.

Hyar, John H.

Forbes, W. T. M.

Hampson, G. F.
Holland, W., J.

McDunnough, J.


Newall, A. G.

Pierce, F. E.
The Genitalia of the Group geometrides of the Lepidoptera of the British Islands. Liverpool. 1924.

Scudder, B. H. and Sargess, E.

Smith, J. E.

Smith, J. E.

Saedgrass, R. E.

Swammerdam, J.
Biblia Historae Lysi. 1737 - 1758.

Tiebovorov, A.

Vorson, E.
Zander, E.


ACKNOWLEDGMENTS

This survey of the male genitalia of the Phalaenidae of Mississippi was begun at the suggestion of Dr. C. J. Drake. For supervision and suggestions during the course of the work I am indebted to Dr. W. H. Wellhouse. For help in the identification of Southern species and for various suggestions during the past five years I am grateful to Dr. J. McDunnough. I wish to record my appreciation for the use of numerous specimens of Phalaenidae collected by the late F. H. Benjamin while he was in Mississippi.
EXPLANATION OF PLATES

The arrangement of the figures follows, as closely as is practicable, that of the Barnes and McDunnough check list. The drawings are not made to scale since the variation in size is so great, however, the actual measurements of the claspers from base to apex are given in the descriptions of the species.

In some cases where the figures have additional parts indicated by letters, it may be construed as meaning that the remainder of the genital structure is similar to that indicated under the number preceding.

PLATE I

Figure A.

This illustration represents the extended genital apparatus of a male Phalaenid as seen from the side. The entire structure in life is obscured by long hairs and scales which arise from the eighth segment. When not extruded this apparatus is withdrawn into the seventh and eighth segments. The figure was drawn from a dried and desiccated specimen of Phalaenopsis laudabilis Ga.

Figure B.

This represents a composite and hypothetical Phalaenid male genital apparatus as seen when mounted on a slide for study. Rarely, if ever, are all the included structures present in any one species. The nomenclature is that of McDunnough.
PLATE II

1. Heliotis virascens Fabr.
   b. H. obsolete Fabr. Clasper

2. Rhotaphora aurea A. & S.

3. Lygranthocia meskeana Grt.
   a. L. maxima Haw. Harpe and apex of uncus.
   b. L. thoracini G. & R. Harpe and apex of uncus.
   c. L. rufimacula Grt. Harpe and apex of uncus.

4. Schinia trifascia Hbn.

5. Schinia gracilenta Hbn.


7. Schinia ariece Grm.

8. Feltia gladiatoria Merr.


10. Feltia subcostata Haw.

11. Feltia anna Treit

12. Feltia maletica Grm.


14. Aerotis o-nigerus L.

15. Epipsilis funeruma G. & R.

PLATE III

1. Lysophotia margaritosa Haw.

2. Lysophotia infecta Oeh.
4. Polia repigera Steph.
5. Polia landabilis Gn.
6. Tylopyga granulata Batl.
7. Nemroleodes axedonia Crem.
10. Anthophora timnie Crem.
11. Seriphia moosderyria Gn.
12. Seriphia junicola Gn.
15. Heleneania rubripennis G. & R.

PLATE IV

1. Pasiphila crutei Morr.
2. Side type rolandi Grt.
3. Conistra viatica Grt.
5. Pterberyga scabriuscula L.
6. Trachaea miscoides Gn.
7. Trachaea indocillia Wilk.
8. Trachaea impulsa Gn.

**PLATE V**

1. *Chytania palliata* Can.
5. *Aeronvota virescens* Ort.
7. *Aeronvota connecta* Ort.
8. *Aeronvota exilia* Ort.
15. *Aeronvota populi* Riley
PLATE VI

1. Aeronypta rubrisoma Gn.
2. Aeronypta longa Gn.
3. Aeronypta oblinita A. & S.
4. Delta remosula Gn.
5. Catacena lineolata Wlk.
6. Prodenia dolichos Fabr.
7. Prodenia audicepta Gn.
8. Laphyma frugiperda A. & S.
11. Crembodes talidiformis Gn.
15. Monodes grata Hbn.

PLATE VII

1. Apamea crypta Grt.
2. Asaphodes zeze Harr.
3. Pyrrhia umbra Hbn.
4. Papsipema nebria nitida Gn.
5. Ogodonta cinerea Gn.
6. Cospia sprina Gn.
7. Stiriag rugifrons Grt.
8. Stiridodes obtusa H. & S.
10. Amolita fessa Ort.
11. Ethisamnia unio Hbn.
13. Phelloscia bripata Dyar
15. Chrysyriria serinthea Treit.

PLATE VIII

1. Lithacodia mueta G. & R.
2. Lithacodia carneola Gn.
3. Lithacodia apicosa Haw.
4. Lithacodia indeterminata B. & MeD.
5. Xanthoptera nigrofimbria Gn.
6. Cryphia villificans B. & MeD.
8. Spragueia leo Gn.
10. Tarachidia straetericidae Gn.
11. Tarachidia candefascia Hbn.
12. Tarachidia semileafa Gn.
15. Pasquea sublatrix Gn.
PLATE IX

2. *Baileya dormitana* Gn.
4. *Catocala opione* Dru.
5. *Catocala robinsoni* Grt.
7. *Catocala viduata* Gn.

PLATE X

2. *Phrysa line* Gn.
4. *Anartostolzia anilia* Dru.
5. *Zale lunata* Dru.
7. *Zale oblique notata* Sm.
10. Charadra deridene Gn.
11. Autographa falcifera Kirby
13. Autographa brevisse Riley
14. Autographa oxygramma Geyer
15. Autographa biloba Steph.

PLATE XI

1. Autographa co Gmn.
2. Autographa co Gn.
4. Raphia abrupta Grt.
5. Strenulinae hulilinae Grt.
6. Malipotis nigrescens G. & R.
7. Malipotis versabilis Harv.
10. Litopora futilia G. & R.
   a. form carneicosta Gn.
   b. form rubricosta Gn.
13. Bendis himna Geyer
15. Erebus adora L.

PLATE XII

1. Epizeuxis lubricalia Geyer
2. Epizeuxis americalia On.
   a. Bomolocha medesastalis On. Glasper
   b. Platypena seabra Fabr. Glasper
7. Matalacta gisialis Grt.
8. Matalacta quadriscinata Wlk.
11. Anomis erosa Hbn.
15. Phytometra seminurzosa Wlk.
17. Tetraceuta synesalis Wlk.
18. Selegasia liburna Geyer
30. Peltidia acopialis On.
31. Salis interpuncta Grt.
32. Dorectis pygmaea Grt.
Proceed depressed extraction in addition to teaching various courses.

Contrary to the unexpected outcome, the work on the planning of the project did not proceed on the expected schedule. The development of the project received mixed reviews, with some positive and some negative feedback. The project, however, showed a high degree of promise, and further work was made on the project.

He became interested in the subject of economics at an early age and made a large

In 1920, the degree from Western State College in 1921.

He spent a year at the University of North Dakota College at a year.

Since June 1920, he has been in the employ of the State Plant Board.

The plant of cotton in Arizona and control of the cotton pest in the

During the winter of 1929-30 he served as agent for the plant board.

He was graduated with the degree of Ph. D. in Plant Pathology in 1929.

During this work over the last five years, he has been associated with the University of Arizona.

He was born in Arizona, and received his education at the University of Chicago.

In September 1928, he entered Montana State College at Bozeman, Montana.
Courses taught include photography, economic entomology, game conservation, vertebrate zoology and general zoology.

He was married to Annie Laurie McElhaney of Columbus, Mississippi on June 5, 1932.