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ENTOMOLOGY FOR BEGINNERS.

THE SATELLITE SPHINX—*Philampelus satellitia* Linn.

BY THE EDITOR.

This is one of the most beautiful of our Sphinx moths, a rare as well as lovely creature, and an object highly prized by collectors. It is found throughout the northern United States and occasionally in Canada, but is no where very common.

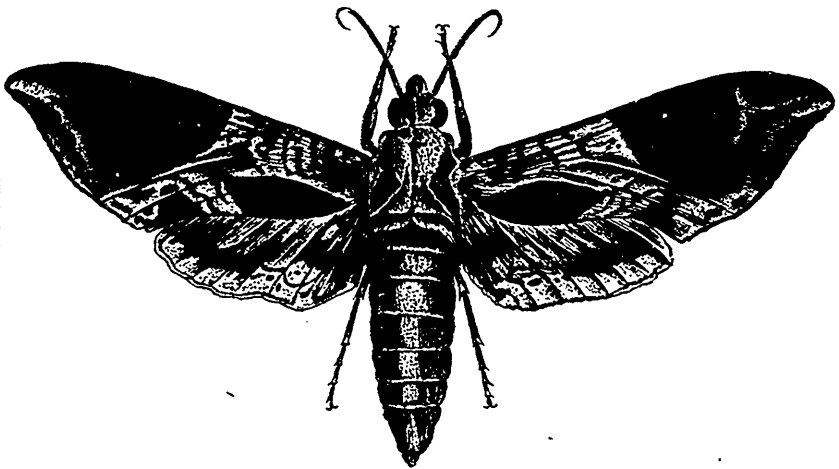


Fig. 4.

The moth (fig. 4), when its wings are expanded, will measure from four to four and a half inches across. Its color is of a light olive mixed with gray and varied with patches of a darker olive green, rich and velvety, and some portions with a rosy hue. The moths appear in July, when after pairing, the female deposits her eggs singly on the leaves of the grape-vine or Virginia creeper (*Ampelopsis quinquefolia*), where they shortly hatch into small green larvæ of a pinkish hue along the back and with a very long pink horn at the tail. As the caterpillar increases in size the tail becomes shorter, and after a while curves round as shown at

c in fig. 5. As the larva approaches maturity it changes to a reddish brown color, and after passing the third moult entirely loses the caudal horn, which is replaced by a glassy eye-like spot. The mature larva when in motion, as shown at *a*, fig. 5, will measure nearly four inches in length, but when at rest it draws the head and two adjoining segments within the fourth, as shown in the figure at *b*, which shortens its length nearly an

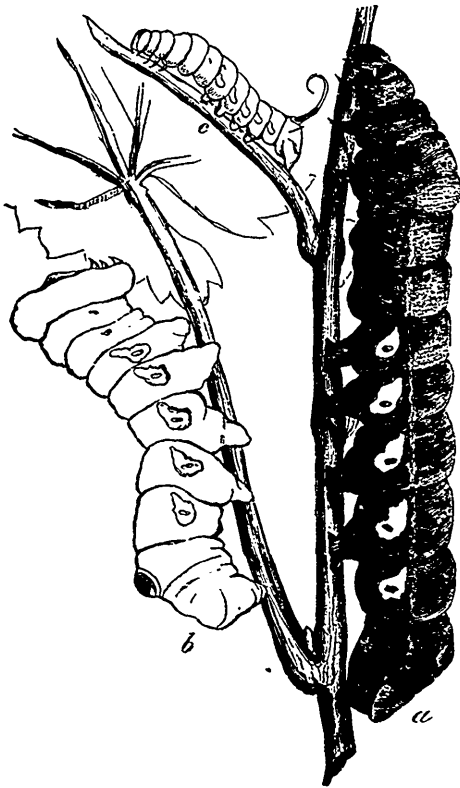


Fig. 5.

inch, giving it a very odd appearance with its anterior portions so blunt and thick. It is of a rich reddish brown color, of a lighter shade along the back, with five or six nearly oval cream-colored spots along each side from the fifth to the tenth segments inclusive; sometimes the spot on the fifth segment is indicated by a dot only, in other instances entirely wanting. On the anterior segments there are a number of black dots; a dark polished raised eye-like spot in place of the tail; stigmata black, showing prominently in the cream-colored spots along the sides.

It is a very voracious feeder, and where present strips the vine so rapidly of its leaves that it soon attracts attention. When full grown it descends and buries itself in the ground,

where it forms an oval cell within which it changes to a chrysalis. The chrysalis is of a chestnut brown color with the segments roughened with impressed points, the terminal ring having a long thick spine. The insect usually remains in the chrysalis state until the following summer, but sometimes it hatches the same season. In the 9th vol. of the

CAN. ENT., p. 120, an instance of this sort is recorded by Mr. R. Bunker, of Rochester, where the larva became a chrysalis on the first of August and produced the moth on the 10th of September. Should these larvæ at any time prove troublesome, they can be readily subdued by hand-picking.

LIST OF N. AMERICAN ANTHOMYIDÆ, EXAMINED BY
R. H. MEADE, ESQ., BRADFORD, ENGLAND.

BY DR. H. A. HAGEN, CAMBRIDGE, MASS.

Mr. R. H. Meade has kindly examined the N. American Anthomyidæ of the Museum of Comparative Zoology in Cambridge, forwarded to him by the Baron von Osten Sacken. The collection was returned last year by the Baron to the Museum. The species are separated carefully and accompanied by a list giving the genera and species, the latter not named except when identical with European species. The notes and determinations of the list differ sometimes from the notes previously published by Mr. R. H. Meade in the Entom. Monthly Mag., 1878, xiv., p. 230-250. Those differences and the more complete statements in the list induced me to publish it, thinking it to be ungrateful to Mr. Meade that his extensive and thorough examination should rest in the archives of the Museum and be lost to science. Baron von Osten Sacken stated in his letter that he has not the intention to work out the Anthomyidæ. I have carefully compared the labeled types in the Loew collection, and have added always the locality for the species examined by Mr. Meade. Where I was able to make out identities, they are given. The collection of the Museum, out of which the Baron himself selected the lot sent to Mr. Meade, will probably contain only duplicates of the lot, except in later additions. Loew's collection contains a number not yet assorted and some new species. Types of European species sent by Loew, Schiner, Gerstaecker and Jmhoff, have been compared with the American ones. O. Sacken's Catalogue has 139 N. Amer. species, including a large number of Fr. Walker's not yet scientifically compared. Mr. Meade has counted (with a few varieties) 121 species, and Loew's collection contains 12 species not seen by Mr. Meade; therefore the whole number of N.

Am. species is 133. Mr. Meade has identified among them 27 European species and Loew 7 more; therefore 34 species seem to be identical with European ones. The Museum owes the most sincere thanks to Mr. Meade and to Baron v. Osten Sacken.

Genus HYETODESIA Rond. (*Aricia* pt. Macq.)

1. Bears a considerable resemblance to *Aricia marmorata* Zett.; 8 male and female; Lake Super., Huds. Bay Terr., Can., N. Hampsh.
No specimen of *A. marmorata* is at hand. I consider *A. morioides* Zett. (perhaps *A. mori* Zett. of O. Sack. Cat., p. 164) to be identical with No. 1. Loew's type is a female from Sitka (Sahlberg), and an *Aricia*.
2. Is perhaps a variety of No. 1; the longitudinal thoracic stripes are narrower; 2, male and female; Lake Super., N. Hampsh.
3. Closely corresponds to the descriptions of *A. serva*; this is perhaps also a var. of No. 1; 1, female; Norway, Maine.
4. Seems identical with *A. lucorum* Fall.; 1, male; West N. Y.
5. Is very similar to *A. obscurata* Meig.; 1, male; Huds. Bay Terr.
6. Differs from any species I know; 4, male and female; Brit. Amer., Western N. Y.; Geysers, Cala.

This species is *A. parviceps*, Loew collect., from Sitka, Sahlberg, male, female; the male agrees perfectly with No. 6; the female differs somewhat, but the 4 spec. of No. 6 seem to represent varieties.

7. Bears a very close general resemblance to *S. pagana* Fabr., but differs by having the eyes decidedly pubescent and also by having 3 instead of 4 thoracic bristles behind the suture; 2, male and female; Englewood, N. Jers.; Maine.

This species is identical with *H. angelica*, Loew coll., male and female (*Spilogaster angelica* O. Sack. Catal., p. 165) and one European type sent by Loew as *Fellaca angelica* Scop. The differences quoted above agree with *F. angelica*; nevertheless the eyes are a little less pubescent in the only European specimen before me, but decidedly as pubescent in the 2 Amer. specimens in Loew's coll.

There are in Loew's coll. the following species named, all different from the No. 1-7: *A. schinophora*, 3, male and female, from Sitka, Sahlberg, and from Alaska, related to No. 5 but different. *A. consors*, 2, male and female, from Sitka, Sahlberg, allied to No. 6.

A. spec., 1, female, from Wisc., *simillima A. Bilbergi*, differt tarsis anticis. In Ent. M. Mag., xiv., p. 250, Mr. Meade has mentioned a species closely resembling *A. lugubris* Meig. This species is not given in his list.

Genus MYDÆA Desv. (*Spilogaster* p. unspotted.)

8. Unlike any species I know; 1 female, Arctic Amer.
9. Corresponds to the description of *M. floricola* Desv.; 1 female, N. Y. This is *Spilog. urbana* Loew, O. Sack. Catal., 3, male and female, in Loew's coll. from Br. Amer. and Conn.; I cannot compare *M. floricola*, but the specimen No. 9 agrees with the European type of *M. urbana* sent by Mr. Meade.
10. Male, Canada; 11 females and 12 males, Western N. Y.; 13 females, Catskill Mts., N.Y.; 14 males, Canada; 15 males, Arctic Amer. Unlike any species known to me. No. 12 seems to be identical with *A. flexuosa* Loew, male and female, from Sitka.
16. Very similar to *M. flaveola* Fall., but has the external transverse vein straight instead of curved; 4, male and female, from White Mts., N. H.; Quebec, Can.; Huds. Bay Terr; Catskill Mts., N.Y. In Loew's coll. labelled *A. diaphana* (*Limnophora diaphana* O. Sack. Catal., p. 166); 7, male and female, from N. Hampsh.; Me.; Brit. Amer.; the specimens are identical with European types of *A. diaphana* sent by Loew.
- 16.a. An imperfect species, very like *A. varians* Zett.; 1 male, Canada; abdomen wanting; agrees well with one European type sent by Loew.

Genus SPILOGASTER Macq. (spotted.)

† Legs black. All species unlike any known to me.

17. 3, male and female. Ky.; Lake Super.—18; 1 male, Huds. Bay Terr.—19; 1 female, Huds. Bay Terr.—20; 1 male, no loc.
 21. 1 female, Huds. Bay Terr.—22; 1 male, no loc.
- †† Legs wholly or partly yellow.
23. Differs from any species I know, but appears to be the analogue of *S. uliginosa* Fall.; 2, male; R. I.

I have compared European types of *S. uliginosa* sent by Mr. Meade and Loew, but they differ so strikingly from No. 23 that I am unable to say why they are analogous.

24. 1 male, Western N. Y.—25. 1 female, Cambridge, Mass. Both unlike any species known to me.
26. The generic position of this injured specimen is rather doubtful; 1 female, D. C.
27. Corresponds to Rondani's description of *S. hirticrura* and is very like *A. pertusa* Meig.; 7, male and female, from N. Y. and Ill.

I cannot compare *A. pertusa* nor *S. hirticrura*; the species is *Anth. trabeata* Loew; one type of Loew with his label is among the specimens No. 27; in Loew's coll. there are 7 specimens from N. Y., Ill., Pa., D. C.

Mr. Meade says, Ent. M. Mag., *l. c.* p. 251: In *Spilog*, there were eleven species. . . . There was only one male in the collection, and it bore a remarkable resemblance to *Cyrtoneura meditabunda* Fabr. The fifth longitudinal wing vein was curved in a similar manner towards the fourth vein, though in a less degree. . . .

There must be some misunderstanding here which I am not able to solve, as the eleven species before me contain 12 males belonging to 7 species. I have compared every one carefully with a type of *Cyrt. meditabunda* sent by Loew, without finding any male corresponding to the characters of *C. meditabunda*. Later I found among the Diptera not seen by Mr. Meade one female very well agreeing with the characters mentioned, bearing a label *M. meditabunda?* written by O. Sacken.

Genus HYDROPHORIA Desv.

28. Unlike any species known to me; 1 female, Connecticut.
29. Resembles *M. ambigua* Fall.; 1 male, Huds. Bay Terr.
30. Unlike any species known to me; 1 female, Brit. Amer.

Genus DRYMEIA Meig.

31. A well marked species which differs slightly from the only European one, *D. hamata*, 4, male and female, from Huds. Bay Terr.

It is difficult to decide about the similarity with *D. hamata*, as the Amer. specimens are in a rather indifferent condition; the European types sent by Mr. Meade and Loew are much larger. Formerly, *l. c.*, p. 251, Mr. Meade had considered them to be quite distinct.

GENUS HYDROTEA Desv.

32. Appears to be identical with *H. dentipes* Fall.; 1 female, Canada.
In Loew's coll., 2 females, 1 from Sitka, Sahlb., with the same determination.
33. Seems identical with *H. armipes* Fabr.; 3, male and female, Cambridge, Mass.
In Loew's coll., 1 male from Nebraska with the same determination.

GENUS LASIOPS Meig.

34. Something like *L. canotans* Meig., but it is not identical; 1 male, Br. Colombia..
35. Not like any species known to me; 4, male and female, N. Hampsh.

GENUS OSPHYRA Desv.

36. Similar to *A. leucostoma* Fall.; 5, male and female, from D. C., Mass., Maine.
In Loew's coll., 5 male and female, from Maine, New York, D. C., identical with No. 36, labelled *A. leucostoma*.
- 36.a. Not like any species known to me; 2, male and female, Canada.

GENUS LIMNOPHORA Desv.

37. Somewhat resembles *A. confuncta* Wied., but has the eyes more widely separated in the male; 6 male and female, from Mass.; N. Y., D. C.; Hudson Bay Terr.
38. 1 male, N. Y.—39; 1 male, Connect.—41; 1 male, Huds. Bay Terr.—42; 1 female, N. Y. 43; 1 male, Mass.—43 a (lost) Huds. Bay Terr. All not like any species known to me.
40. Very like *Coenosia triangulum* Zett. This species might perhaps be placed in the genus *Coenosia*, as the eyes in both sexes are separated by a widish interval. But this occurs to some extent in nearly all the species of this genus; 1 male, Catskill Mts., N. Y.
L. stygia Meig., O. Sacken Catal., p. 152, in Loew's coll. from Sitka, Sahlberg, is not represented among the species examined by Mr. Meade. *L. triangulifera* Zett., †male, labelled by Loew, is in the collection of the Museum.

GENUS HOMALOMYIA Bouché.

44. Identical with *M. canicularis* Linn.; 11 male and female, from South Greenland; Mass., Maine, Conn.

In Loew's coll. are 10, male and female, N. Y., Maine, with the same determination.

45. Identical with *A. scalaris* Meig.; 8, male and female, Maine, Mass., Pennsylvania.

In Loew's coll., 12 male and female, D. C., Pa., Wisc., with the same name.

46. Identical with *M. prostrata* Rossi (*invisurata* Zett.); 2, male and female, N. Y., Mass. There are 3, male and female, from the same locality in the Museum's coll.

47. Probably only var. of *H. canicularis*; 4 females, Middle States, Mass.

49. Not like any species known to me; 1 male, N. Hampsh., abdomen wanting; the other from Hudson's Bay Terr., lost.

Probably *H. serena* Loew, but the specimen is too imperfect to be sure.

50. Not like any species known to me; 4 females, from South Greenland; N. Y. All imperfect.

There are in Loew's collection the following determined species:

1. *H. manicata* Meig., from Sitka, Sahlb.; *H. serena* Fall., from Br. Amer.; *H. subpellucens* Zett., from Sitka, Sahlb.; *H. tetracantha* Loew, from Middle States; *H. femorata* Loew, from Cuba. The *H. spathulata* Zett. quoted with * in O. Sack. cat., p. 170, is not represented.

Genus AZELIA Desv.

51. Seems identical with *A. Slaegeri* Zett.; 1 male, N. Hampsh.

Genus ATOMOGASTER Macq.

Is not among the specimens examined by Mr. Meade, but represented in Loew's coll. by 5, male and female, from Texas; Nebr. *A. albicincta*.

Genus ANTHOMYIA Meig.

52. Identical with *M. radicum* Linn.
53. 3 males, Regio. arct.—54; 1 male, probably Mass.—55; 1 female, Cambridge, Mass.—56; 2, male and female, no loc.—58; 1 male, Illinois. All not like any species known to me.
57. Identical with *A. latitarsis* Slaeg. & Zett.; 2, male and female, from N. Hampsh. and N. Y.
59. Very similar to small specimens of *A. pluvialis*; 1 male, Long Island, N. Y.

Genus HYLEMYIA Desv.

† Legs black.

60. Not like any species known to me; 10, male and female, Brit. Am., N. Y., N. J.
61. Not like any species known to me; 5, male and female, N. Hampsh., N. Y., Conn.
62. Resembles *H. antiqua* Meig.; 2, male and female, Hudson's Bay Terr., Reg. Arctic.
Is identical with *H. deceptiva* A. Fitch, 2 types in Loew's coll.
†† Legs yellow.

63. Not like any species known to me; this is perhaps *A. alcatheae* Walk. Mus. Cat.; 6, male and female, N. Hampsh., N. Y., Mass.

Is identical with *A. tarsata* Sik., male and female, N. Y., Ill., labelled by Loew.

In Loew's collection are 2 males from Cuba, types of *H. angustifrons* Loew, united (O. Sack. Cat., p. 167) probably after examination of Macquart's type with *H. pici*. Loew has written on the label: "Can be taken to be *H. pici*, if it is assumed that the artist has allowed himself wild fancy in drawing the veins of the wings and the bristles of the legs." On the label of the second specimen is said: "Probably the pale-winged variety quoted by Wiedeman as his *quadrilineata*."

- 64.—73. Unlike any species known to me. 64. 4, male and female, N. Y.—65; 1 female, N. Y.—66; 2 females, N. Hamps.—67; 1 female, Hudson's Bay Terr.—68; 1 male, D. C.—69; 3 females, Hudson's Bay Terr., Canada, N. Hamps.—70; 3 males, N. Y.—71; 2 females, Lake Super.—72; 1 female, Maine.—73; 3 females, Nebraska.

Genus CHORTOPHILA Macq.

† Legs black.

74. Very similar to *C. floccosa* Meig.; 1 male, Mass.
75. 1 male, Mass.—76; 1 female, California—77; 1 male, Regio Arct.—
All unlike any species known to me.
78. Seems identical with *A. angustifrons* Meig.; 5, male and female, Br. Amer., Maine, Mass.

Is identical with *Anthom. calopteni* Riley, infesting the eggs of *Caloptenus spretus*, after the types in the Museum sent by Mr. Whitmann from St. Paul, Minn.

79.—85. 85 *a*. Not exactly like any species known to me. 79. 1 male, Hudson's Bay Terr.—80, 1 male, N. Y.—81; 1 male, Canada—82; 1 male, N. Y.—83; 1 male, Hudson's Bay Terr.—84; 10, male and female, Hudson's Bay Terr., Maine, N. Y., D. C., Arctic Reg.—85; 8 females, Mass., Conn., N. Y.

†† Legs yellow.

86.—92 and 96—101. Unlike any species known to me. 86, 1 male, Conn.—87, 2 females, Conn.—88, 1 male, Cala—89, 3, male and female, N. Y.—90. 5, male and female, N. Y.—91. 7, male and female, Mass., bred from *Rumex* by O. Sack.—92. 1 male, N. Y.—96. 1 female, Hudson's Bay Terr.—97. 1 female, no loc.—98, 1 female, South Greenland. 99, 1 female, Hudson's Bay Terr.—100, 1 female, no loc.—101, 1 female, Regio Arct.

93. Resembles *A. gilva* Zett.; 2 females, N. Y.

94. Very like *A. vittigera* Zett.; 3, male and female, N. Y.

95. Very like *A. flavoscutellata* Zett.; 1 male, N. Hampsh.

In Loew's coll. one species with black legs from Texas is labelled *f. Chort. cilioraca*.

Genus LISPA Latr.

102. Like *L. tentaculata* Deg.; 2 females, N. Y.

Identical with *L. sociabilis* Loew; 5, male and female, D. C.

103. Like *L. oliginosa* Fall.; 1 female, Hudson's Bay Terr.

Identical with the same species by Loew from Ill.

104. Not like any European species; 1 female, Maryland.

In Loew's collection are *L. flavicincta* from Hudson's Bay Terr., and *L. consanguinea* from Texas.

Genus CARICEA Desv. (Cocnosia Meig.)

105. This very distinct species, of which there are many specimens, is different from any European one that I know; the female closely resembles that of *Mydaea impuncta* Meig. 27, male and female, from Hudson's Bay Terr.; Canada, N. Hampsh., Mass., N. Y.

Genus COENOSIA Meig.

106—115; 117—121. Not exactly like any species known to me; 106, 4, male and female, N. Y.—107. 3 females, Cuba, is labelled in Loew's coll. *C. strigosa* Loew. 108. 4, male and female, Mass.—109. 3, male and female, N. Hampsh., C. D., is *C. subsimplex*

Loew (not described) from D. C. 110. 2 females, Rhode Island—111. 1 male, Canada—112. 1 male, Canada—113. 2 females, Conn. 114. 1 female, D. C.—115. 3 males, N. Hampsh., Conn., D. C., is *C. calopyga* L. from Pa.—117. 4, male and female. Hudson's Bay Terr., N. Hampsh., C. D.—118. 1 male, Hudson's Bay Terr—119. 2, male and female, Canada, Mass.—120. 1 female, Hudson's Bay Terr.—121. 1 male, D. C.

116. Very similar to *C. pygmaea* Zett.; 1 male, Canada.

In Loew's coll. is also *C. modesia* from Washington Terr., not from Washington, D. C., as in O. Sack. Catal., p. 171; and *C. nivea* from Pa.

Genus SCHOENOMYZA Hal.

In Loew's coll. are the types of *S. chrysostoma* from N. Hampsh., and *C. dorsalis* from D. C.

NEW SPECIES OF CYNIPIDAE.

BY H. F. BASSETT, WATERBURY, CT.

CYNIPS Q. CALIFORNICA, n. sp.

Galls: Polythalamous, sessile on the branches of the Californian White Oak (*Quercus Hindsii*?) Sub-globular, but varying much in form and size. A common form is what may be termed balloon-shaped, the upper part perfectly globular, the lower tapering more or less to the sessile base. They often occur of a long compressed oval form: these are placed longitudinally on the branch and the length is two or three times their breadth or thickness. Those of this form are often of monstrous size, being ten or twelve inches in their greatest circumference. The globular galls are from one to two inches in diameter. In color they are of an opaque white. They are usually smooth, but specimens occur that have a more or less warty surface, and others are found that have slight yellowish brown ridges. Internally they are of a uniform, dense cellular structure, and the not very numerous larval cells (from one to a dozen) lie closely imbedded in this cellular substance.

From their shape and color these galls might easily be mistaken for a species of white fungus which grows on trees.

My specimens were collected in 1878 and in 1880 at Redwood City, Cal., by Mr. Wm. Sutton, of San Francisco.

There are some very large specimens of these galls in the Museum at Cambridge, collected in Cal. by Baron Osten-Sacken, I believe. They are, with a single exception (*Cynips punctata* B.), the largest galls known to me, and I have given them the name of the State in which they, and so many other natural objects of surprising magnitude are found.

The insects gnaw their way out of the galls in October, but of the growth of the galls themselves I have no information. The insects are all females, and belong to the agamous generation, and in structure they differ but little from *C. inanis*, *C. aciculata*, *C. spongifica* and many others that are, as yet, known only in the female sex.

The insect is described as follows :

Head small; ocelli medium size, very close together. Face covered with short white hairs which are appressed, and which converge towards the mouth. Mandibles large and heavy, shining black at the tips. Maxillary palpi 5-jointed, labial 3-jointed. Antennæ with fourteen joints; 1st joint short, rather thick; 2nd small, globose; 3rd equal in length to the two preceding together; 4th to the 13th gradually shorter; 14th long as the two preceding taken together. Thorax with short appressed hairs, and with grooves as follows: Two parallel lines start near together on the collare, near the dorsal summit, and extend half way to the scutellum; two similar but rapidly diverging lines from the same point on the scutellum, extending half way to the collare. Two starting from the scutellum outside the first pair, and extending to the base of the wings; these last are nearly parallel. All these grooves are smooth and shining, but very fine and only seen to advantage under a magnifier.

Scutellum nearly oval, surface slightly shagreened and with a few scattering white hairs. Fovæ indistinct or wanting.

Pleuræ and legs covered with short shining white hairs. Tarsi dark brown, ungues black. Basal half of the first abdominal segment hairy. Sheath of the ovipositor dark shining brown, not exerted. Ventral hairs microscopic.

Wing veins dark brown, surface of the wings covered with short fine hairs; radial area open, areolet of medium size. The head—except from the mouth to the occiput, which is black—the antennæ and the entire

insect, including the wings, with the slight exceptions noted above, a dusky yellowish brown. Length .22; wing .23; antennæ .13.

Described from living specimens.

CYNIPS Q. AGRIFOLIAE, n. sp.

The galls from which I have reared this really fine species were sent me from California by my brother, H. D. Bassett, of San Francisco, with a branch and leaves of the oak on which they grew. They grow on the twigs of *Quercus agrifolia*, one of the family of evergreen or live-oaks. The first specimens sent me reached me in November, 1877. From these perfect insects appeared Dec. 21st, 1878. Whether the larvæ matured earlier or later in the warm room in which they were kept, than they would under normal conditions, I cannot say; but from what I know of other species, I judge this had little effect upon their development.

As they mature in the autumn, and as all that I have yet reared are females, and as these bear a close resemblance to the other agamous species known to me, I conclude that these are the one-gendered generation of a dimorphic form. The gall fly is even lighter in color than *C. Californica*, and these two species differ very greatly in this respect from any other species known to me.

Galls: Monothalamous, perfectly round, very hard, and internally of a dense cork-like consistence, like the galls of *C. globulus*. They are from $\frac{3}{4}$ to $\frac{3}{8}$ of an inch in diameter. The surface is microscopically pubescent and uneven, and the color varies in different specimens (dry) from a rather dark, dull clay color to that of raw umber. The single larval cell is adherent on all sides to the gall substance. The point of connection of the gall with the twig is scarcely discernible in most specimens, in others it is indicated by a minute dot from which fine lines radiate. I learn that these galls are so abundant that the ground is sometimes almost covered with them.

Gall fly: Head, and with slight exceptions, the entire body, are extremely pale yellowish brown, the head and the lower part of the abdomen palest, the first somewhat translucent. Eyes, ocelli and the tips of the mandibles jet black and contrasting beautifully with the prevailing color. Antennæ 14-jointed; 2nd half the length of the 1st, not globose; 3rd long; 4th to 8th gradually shorter, the remaining six short and of equal length. The antennæ light, deepening to dark brown towards the extremity.

Thorax very finely punctate on the mesothorax, coarser and less regular on the scutellum and with scattered microscopic hairs throughout. Parapsidal grooves: These differ considerably from the usual form, inasmuch as the anterior parallel pair are perceptible only under a powerful lens and appear as smooth shining undepressed lines, and the two diverging lines which rise on the posterior margin reach quite to the collare. These last are very distinctly impressed, as is also the line over the base of each wing. Fovæ small, appearing as a shallow, smooth groove at the base of the mesothorax. There is a scarcely perceptible ridge dividing the groove in the middle. On the breast there is a black spot which is usually quite concealed by the head, and also a dark brown spot on the posterior angle of the thorax; this is concealed by the wings when they are closed. Legs the same color as the body, except that the tarsi are dusky brown and the ungues black.

Wings of a decidedly yellowish hue. Veins slender and pale, areolet distinct; radial area open, long and very narrow.

Abdomen large; 1st segment with a dark, highly polished spot on the anterior dorsal margin, and laterally there are a few fine hairs; 2nd and 3rd segments each with a dark nebulous spot, similarly situated, but less intense and less sharply defined than that on the first segment. Sheath of the ovipositor not exerted, a little darker than the general surface of the body, and with short hairs or bristles along its whole length. In the living specimens there is on each side of the sheath a dark curved line, and seen from beneath these form an elliptic oval. Length .15; wing .18; antennæ .13.

Described from numerous living specimens.

CYNIPS Q. SUTTONII, n. sp.

Hard woody galls forming a prodigious enlargement of the small twigs and branches of *Quercus* sp.? from Cal. They vary in size from one-half to more than two inches in diameter. Most are globular, while a few are elongated in the direction of the twig which they surround. The wood is very hard, and is curled and twisted as in woody knots generally. The bark is smooth, and in young galls polished and shining. Extending from the centre of the gall quite to the bark, but not piercing it, are a large number of rounded and sub-compressed hollow tubes, closed and bluntly rounded at the base, and flat and slightly enlarged at the top. They are one-half inch in length and three-sixteenths in diameter. It is

not difficult to remove these tubes or larval cells from partially dried galls. Their thin walls are formed of long straight woody tissue. In the basal third of the tubes are the larval cells, one in each, and above the larva is a thin paper-like partition so concave beneath as to form, with the sides and bottom, an oblate spheroidal larval cell. Above the partition are a few shreds of a pith-like substance that filled the entire tube while growing. The bark is all that offers serious hindrance to the egress of the insect when mature.

I have been thus particular in describing the structure of this gall because several other species known to me have a structure somewhat similar and I do not remember to have seen them described.

Gall-flies: All females. Head black, and with the entire thorax covered with short appressed hairs. Vertex slightly rugose. Antennæ dull dark brown, 15-jointed; 1st joint large, club-shaped; 2nd short, ovoid; 3rd a little longer than two preceding taken together; 4th to the 9th each slightly shorter than the preceding one; 10th to 14th of nearly equal length; 15th very short and small, but separated from the 14th by a very distinct suture. Face black, mandibles dark. Thorax with two short smooth parallel lines, not grooves, which extend half way from the collare to the scutellum, and two outside of these also parallel, which extend half way from the scutellum to the collare; also a smooth line over the base of each wing. All these lines are smooth and entirely destitute of hairs, and in certain lights they appear as slightly raised ridges, rather than as furrows, as is the case in other species when the parapsidal lines are present. Legs dark brown, nearly black, except the femur, which is a clear shining brown. Ungues black. Wings hyaline, subcostal and first transverse veins heavy, others slender, but distinctly defined; all dark dusky brown, almost black. Areolet large, cubitus very slender, in some cases not quite reaching the first transverse. Radial area open and the radial vein straight.

Abdomen clear shining brown; first segment in size equal to the three following taken together. Microscopic hairs on this segment beneath the wings. Sheath of the ovipositor dark brown and with the ventral valves, has fine short hairs along the entire length, but no tuft of these at the point of either, as in most species.

Length: Body, .15, wing .20, antennæ .08.

I first received this species from Mr. William Sutton, of San Francisco, Cal., to whom I am also indebted for other interesting species of

galls from that section, and I take pleasure in giving to it the name of its discoverer.

CYNIPS Q. NUBILA, n. sp.

Galls : Densely hairy, sub-globular or hemispherical clusters of galls on the under side of leaves of an unknown species of oak; always on the mid-vein. When fresh the hairs are of a fine deep crimson, but fade somewhat in drying. At the base they are yellowish white. The galls in each cluster grow from the same point on the leaf, and the clusters are from one-half to one inch in diameter, and contain from one to five or more galls or larval cells. The cells, denuded of their covering of hairs, are nearly globular, tapering, however, to an obtuse point at the end attached to the leaf, and they measure from three-sixteenths to nearly or quite half an inch in diameter. The shell is about .02 of an inch in thickness (thicker than this at the base, however,) and is very hard and brittle when dry; it contains no larval cell, and its inner surface is slightly roughened as if gnawed.

These galls, in their dense hairiness and in their size and outward appearance, resemble closely those of *C. q. tenuicornis* n. s. from the same locality; but while in this species the larval cells are separate, in *tenuicornis* they are enclosed in an envelope of a dry porous consistence. The fine crimson color, too, seems to be a constant character of *C. q. nubila*, and the insects from the two galls are widely different.

Gall-fly : All females. Head very small, dark reddish brown. Vertex finely punctate or crackled. Ocelli shining, of medium size. Antennæ 13-jointed, rather slender, the base prominent; 1st joint tapering from its abruptly truncate summit; 2nd short, ovoid; 3rd one-fourth longer than the two preceding taken together; 4th equal to the 1st and 2nd; 5th to 8th gradually shorter; 9th to 12th sub-equal; 13th slightly longer than the 12th. The joints, particularly the 3rd, 4th and 5th, closely connected, but with a slight enlargement at the nodes in these last mentioned.

Thorax very dark reddish brown, in certain lights appearing black, covered with very short appressed hairs, which give a slight ashen hue to the surface as seen with the naked eye. Two fine, smooth, rather indistinct parallel lines reach half way from the collare to the scutellum, and two distinct grooves from the collare, converging towards the scutellum and increasing in size as they approach that point. Scutellum distinctly wrinkled or rugose. Legs very dark reddish brown, somewhat shining,

and paler and sub-translucent at the joints. Wings very large, hyaline. Veins heavy, black. Areolet very small, radial area open, broad. The base of the radial area covered with a dark semi-transparent cloud which includes the 2nd transverse vein. The cubitus in this species, as in *C. g. bella*, is heaviest towards the 1st transverse. At their intersection there is a dark cloudy spot, and a still larger ashen cloud near the tip of the wing. This last does not touch the veins nor the margin of the wing.

Abdomen very large, and viewed laterally, nearly circular in outline; 1st segment a little longer than the four following taken together. These last are sub-equal, and each of a deep yellowish brown on the posterior half, but lighter anteriorly. All the light bands, together with the lateral portion of all the segments, covered with minute microscopic hairs. Sheath of the ovipositor small, with a brush of rather long hairs at the apex.

Length: Body .15, wing .20, antennæ .13. This fine and truly remarkable species was collected in the Mule Pass Mts. in Arizona, in Nov., 1879, by Prof. E. T. Cox, to whom I am indebted for many other interesting species.

COENONYMPHA ELKO.

BY W. H. EDWARDS, COALBURGH, W. VA.

Male: Expands .95 to 1 inch.

Upper side pale ochre-yellow, immaculate; fringes concolored.

Under side of primaries nearly same ochre-yellow over basal area and part of disk, limited without by a slightly sinuous and crenated edge of deeper color, much as in the allied species; outside this, slightly ochraceous next inner angle, but yellow-buff over apical area.

Secondaries have the basal area uniform gray-brown, the outline distinct and in strong contrast with the remainder of the wing, which is yellow-buff. Very slightly dusted gray; the outline is irregularly crenated, with a deep sinus on upper sub-costal interspace and another on lower disco-cellular interspace.

Female: Expands 1 inch to 1.02.

Upper side like the male. Beneath, the area just outside the crenated edging on disk of primaries is yellow for a little distance, then tinted

ochraceous to margin; in one example a minute black dot in the discocellular interspace with white centre; in another no dot; secondaries as in the male, the basal area one shade of gray, with distinct crenated outline, and beyond a yellow or buff ground to margin, very little dusted gray.

From 2 ♂ 2 ♀ taken at Elko, Nev., 1880, and sent me by Mr. J. Elwyn Bates, of So. Abington, Mass. Mr. Bates informed me that he had quite a number of examples. The present species is nearly of same color with *C. ampelos* Edw., from Oregon; on upper side a little more yellow, and with less gloss. The under side is much lighter, and on secondaries the contrast between the dark basal area, with its clear cut outline and the pale yellow extra discal area, is great. *Ampelos* has the under side of same general character as *Inornata* Edw. (only different in coloring), from Montana and Winnipeg. *Elko* resembles *Californica* Bois. rather, in which species many examples have the basal area dark and the entire outline of same distinctly defined.

COLLECTION NOTES FOR 1880.

BY JAMES T. BELL, BELLEVILLE.

The early months of 1880 were especially favorable to the acquisition of the hibernating Coleoptera, and those which have their permanent habitat among the moss of our woods and swamps. The early disappearance of the snow laid bare their hiding places, while the frosts which succeeded formed an ice-bridge which gave access to their places of refuge, which in ordinary seasons remain covered with snow till the general break-up of the winter, when they are rendered inaccessible by being surrounded or covered with water. Mr. J. D. Evans and myself, who are the sole representatives of the Entomological Society in this district, took advantage of these favorable circumstances and commenced a vigorous course of moss-hunting, lasting from March 1st to May 24th. During this period we collected upwards of 1,000 specimens of over 100 species, of which the following are not included in the Society's published lists. The numbers are those of Crotch's Check List, and the determinations, with few exceptions, were made by Mr. H. Ulke, of Washington, and Mr. E. P. Austin, of Boston.

- 7496 *Anchus pusillus*.
Hydrochus (nova species, Ulke).
 1579 *Trichopteryx Haldemanni*.
 " 2 sp. (nova species, Ulke.)
 2102a *Pselaphus longiclavus*.
 2110 *Bryaxis conjuncta*.
 2120a *B. propinqua*.
 2134 *Decarthron formiceti*.
 2139 *Arthmius globicollis*.
 2295 *Scydmaenus bicolor*.
 " 2 species not determined.
 2366 *Latridius deletus*.
 2572 *Atomaria ochracea*.
 5670 *Xanthonia Stevensii*.
 5771 *Plagiodera cochleariæ*.
 6294 *Paratenetus gibbipennis*.
 9027 *Tanysphyrus lemnae*.
 9293 *Ceutorrhyncus semirufus*.
 1818 *Philonthus palliatus*.
 7749 *Stilicus biarmatus*.

All the above were taken from moss, and in addition the following, which are already registered as Canadian: 2095, 2100, 2102, 2103, 2113, 2124, 2130, 2149, 2150, 2164, 2283, 2285, and about 70 species of Carabidæ, Staphylinidæ, Chrysomelidæ, Curculionidæ, etc.

3932 *Alaus gorgops*; from a stump in Bleecker's Woods.

On June 7th we experienced a heavy gale from the S. W., and on the 12th one of my daughters, who was visiting at West Lake, Prince Edward County, went with a pic-nic party to the Sand Banks, on the shore of Lake Ontario. There she found the beach strewn with *Calosomas* and other Coleoptera. On her return she brought me 16 *C. scrutator*, 13 *C. Wilcoxi*, 1 *C. frigidum*, and many other beetles. On July 1st, Mr. W. R. Smith being at Brighton, found on the beach at Presq' Isle a similar display of *Calosomas*, and brought me 14 *C. scrutator*, 24 *C. Wilcoxi*, and 3 *C. frigidum*; unfortunately most of them were spoiled from exposure.

In June I had brought to me a rather fine specimen of *Eacles imperialis*, and a good male of *Xyloryctes satyrus*, both taken within half a mile from the city limits.

With these exceptions, the season of 1880 has proved the least favorable to the Entomological collector, in this quarter at least, of any I have experienced in my 21 years' residence in Canada. Very few Lepidoptera were seen, either on the wing or at sugar; beating the bushes was singularly unproductive, and I have more than once picked stumps and turned over stones for a full hour without getting 20 specimens of all sorts.

CORRESPONDENCE.

CORRECTIONS.

In the paper on the early stages of *Gracilaria stigmatella*, ante pp. 25-28, occur the following errors, no doubt overlooked by me in the proof: On p. 26, "85 mm." and on p. 27, "8 mm." and "6 mm.," for which respectively read .85 mm., .8 mm. and .6 mm. (fractions instead of integers). And on p. 28, 13, for "mine" read cocoon.

V. T. CHAMBERS, Covington, Kentucky.

FOOD HABITS OF THE LONGICORNS.

In June, 1873, while collecting in a small swamp on Montreal Mountain, I caught a specimen of *Pogonocherus mixtus* Hald. on my coat-sleeve, and as the insect was new to me, I commenced a search for others. Upon examining a dead branch of a small willow growing close by, I found that it had been extensively bored by some small insect. The part attacked was about three feet from the trunk, and at this place the branch, for about twelve inches, was full of holes from which the insects had escaped. Not finding them, I searched further along the branch, and near its extremity, where it was reduced to the thickness of a twig, I found a number of the above-named species. They were lying on the branch with their bodies pressed closely against it, and in this position could with difficulty be distinguished from the withered buds. I observed several pairs in coitu, but none of the females were ovipositing. They appeared to be very sluggish, lying almost motionless, although the sun was shining brightly at the time. Having bottled all that were to be seen, I cut off the branch where it had been perforated and found a number of the beetles in it, but neither larva nor pupa.

Gaurotes cyanipennis Say.—I find this insect in spring on thorn blossoms, and later in the season pairing and ovipositing on butternut.

F. B. CAULFIELD, Montreal, P. Q.