

626-678

605 out June 24 1898  
Chambers

♀ out Dec 31 Eupoeya alrossoniae

29 good cocoons

5 dead

10 parasite

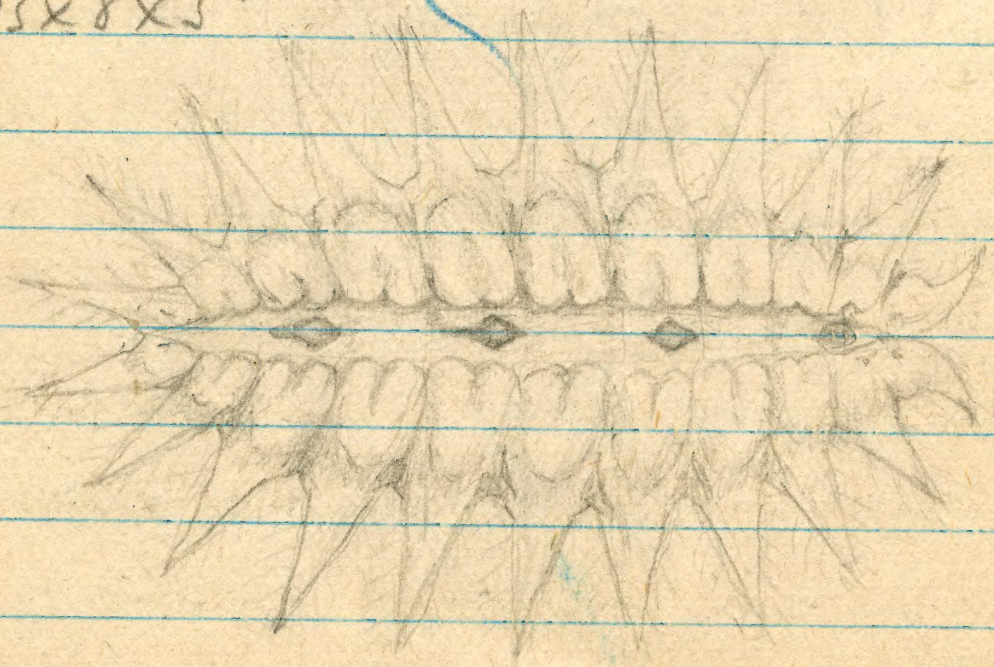
14 moths

626

Code on mangrove, Miami river Fla. Dec.  
26 1896. Solitary on back of leaf; (white cocoons)  
Elliptical, rather thick centrally, but flattened  
down at each end, fringed by a row of  
fleshy, cornicoid appendages, arising sub-  
dorsally, <sup>directed obliquely downward to leaf</sup> 11 in number (3-13 apparently). 2nd  
short curved, the rest straight, of almost equal  
length after 4<sup>th</sup> pair, short haired above, on  
the side fringed with long soft smooth  
white hairs which form a cushion  
though not very conspicuous fringe. At the  
base of each appendage above (except 3 & 13  
where they are not pronounced) is a thick  
fleshy, heart-shaped piece which rises above  
the appendage and also above the main  
dorsum, converting it into a channel. They  
have short rudimentary white hair and  
a single long black outward seta. Light  
yellowish green, all the horns tipped  
with orange red, most so anteriorly;

a bluish-red diamond shaped patch with  
 whitish center in the depressed dorsum  
 on joints 4-5, 7, 9 and 11. (4 patches, the ant.  
 one slightly elongate) Horns on 3 & 4 very  
 faint, orange shaded. Sides hid by horns.  
 Lateral area smooth, green, somewhat  
 hollowed irregularly without horns. Very  
 faint whitish areas above the spiracles  
 possibly represent them. The fleshy sd  
 horns come off when bent sharply up-  
 ward and leave an area which exudes  
 a drop of clear liquid. S-V setae below  
 the spiracles rather distinct, white.

Size 13 x 8 x 3 mm.



Dorsal view X 5

PVK. Dec 27.

[Dec 28 got 21 out coms + 43 parasitized = 64]

all horns but @ 3-13 are absolutely absent.  
 The horns arise about in the center of the  
 segment from depressions, and there is  
 a smooth bulge of the skin below. The  
 spiracle on joint 5 is in line with the  
 others but appears slightly unbalanced.  
 oval, rather higher in the fold in pro-  
 portion. There are on the horns a few short  
 pale yellow hairs enlarged toward the end,  
 on the dorsal aspect showing as sparse  
 yellowish dots, being very short there.

<sup>(no 2)</sup>  
 Dec. 28 another 13.5 mm. Same, dorsal spots  
 larger and rounded, the one 4-5 centrally constricted

Horns on 3-6, 8, 10, 12 & 13 red tipped, the rest green

<sup>(no 3)</sup>  
 Another (the shed) 11.5 mm Same but uniformly  
 bright fiery <sup>translucent</sup> red throughout; fringe hairs white,  
 short club-hairs faintly yellowish.

<sup>(no 4)</sup>  
 Another about 9 mm, more than half the horns  
 gone. Green, no marks, the horn areas whit-  
 ish. Fringe hairs white, short club hairs yellowish  
 Above spiracle a small, smooth slender

Papilla represent ② on 6-12, absent on 5  
 one at least on 4. A smooth anal flap  
 under the horns ① 13. One on 3 in line with  
 that on 8 and abd. ③ 2 setae 3-13

Date	Dec 29	Dec 30	Spins by holding up all horn which are found withered; spin a net against the smooth part of body, finally enclosed.			
No 1	13.5" shed	spun				
No 2	13.0" "	spinning				
No 3	11.5" "	to shed	Jan	Jan		
No 4	10 eating	11 eat.	12 eat.	13.5 eat.	14.5 eat.	spun Out Feb 21 1897

Dec 30 No 4 has acquired the red spots 4-5, 7, 9, 11, faint  
 diffuse, uniform. Dec 31 Red spots distinct but not pale  
 centers 4-6, 7, 9 and dot 10, 11, 12, 13.

Skin has covered short pale hair from  
 large round flat tubercle like protuberance  
 but colorless with white setae. The horns  
 have 4 hair 1) smooth long setae; and 2) the  
 latter on tip; 3) fringe hair from tubercle smooth  
 at base, then fine feathered  
 4) very short heavily feathered, starlike hair  
 The most horns a low blunt truncate cone in  
 place of ii. In front of ② which is a smooth  
 fringe like process a long pale seta. A seta on  
 3 between ① and stub ② but nothing visible on 4.  
 Egg elliptical, flat, somewhat irregular in size  
 and shape but more circular translucent  
 pale yellow both in glass and leaves 1.6 x .9  
 1.4 x 1.2 etc. laid singly. Peticulation rather  
 prominent, quadrate, irregular, distinct  
 Laid fresh by infertile ♀ on 2nd day.

627

Megalopyge opercularis? on mangrove, Miami  
 Fla, Dec 28 1896. Hair soft, creamy white,  
 obscuring the body; at about joint 5 on the  
 side there is a parting the hair brushed  
 forward (ant.) up and backward (post)  
 from this spot on each side; along  
 the back a distinct crest reinforced,  
 especially about 6-8 by curled creamy  
 range hair, the hair from 13 projecting  
 in a somewhat twisted tail. Length  
 7mm (with tail)

Another (8mm) skin pale purplish, not  
 concealed by the hair. Hairs thin, curving,  
 creamy whitish, ① 6-9 with some long  
 curled orange hair which form a fluffy  
 dorsal crest and by divergence, a short  
 lateral crest on each side, 2 setae,  
 3 hairs on j. 3 the lower small, two on 4 both  
 large, the on 5-12 moderate, one on 13.

Shed Dec 30 Hair creamy orange, crested,

also slightly laterally, end and lateral just. Hair fluffy. Body obscure. Much like *matsumi* larva but smaller and rather more fluffy. Shed Jan 14. Like next. Hair paler than before, the side crests reduced as if to be absent and the dorsal crest curled and most prominent in the middle of the back. Length 14 mm just after shedding (with tail)

628

Alcoholic *Pamphila ettilius* from S. Ruscheweyh, Buenos Aires, Argentina.

Head large rounded not bilobed, coarsely rugose with fine plus pale pile, dark red brown, a large round crimson spot before the ocelli; a black shade on the mouth; width 5.3 mm

neck small, a large red-brown cd. Body white, 2 (except shield) and base of all feet except 13 crimson, laterally on each segment 4 or 5 little transverse <sup>broken</sup> black streaks; a trace of orange on each side of anal plate (on a pulverulent yellow field). Segs 6-annulate; skin very finely covered with minute white pile, inconspicuous.

(tending to form a broken yellow sd line) Crotchets of abd. feet in a circle, the long hooks on the inner side and of 2 or 3 different lengths in different parts.

Cale. .32 49 .75 1.13 1.7 (2.1) 2.6 rat. 66

.87

629

Alcoholic larvae (A. Koehle coll.) from Nat. Mus. sent up with Apatelas. Seem to be a Callimorphia. Head red, eyes, mouth black. W 2.6  
Body very rather slender; warts small, well alternating, in small, with col. shining blue black. Body brown black, a very broad bright yellow d. line, narrowed to fine between in each segment, a broken sd line, distinct in the incisure (iii), a broad spiracular line (also v) incised down by iv, somewhat notched a few yellow rings around vi, by plate blue black, a broad medio-ventral yellow band. Hair black, small, not abundant. Pale from v-vi. Cth marked with two blue triangles. Hd 1.7 Same Hd 2.1 Same ventral band yellow in the big ones, pale gray in the small one

*Gnophacha latifemur* Bd  
(#59 1899)

OR

629

Stage VI Head small rounded, bright red, eyes, mouth blackish, line above mouth white, setae black. Body brown, heavily marked with yellow. Warts small, with by plates shining blue black. Hair black, & white, not numerous. Short branched. A broad bright yellow d. band, incising into better segs, but contracting to space between narrow in front, passing in a line between the small d. bands of cth, reaching the dark anal plate. A series of rather broad white seg sd yellow dashes (between ii & iii). A very broad yellow strip band supra- & sub-sty line joined broken behind the spiracle of a line of gray color oblique down-forward across iv and another || one fine below behind this; also incised by iii, obsolete surrounds v a narrow ring. A ring around vi. A broad ventral yellow band almost joining lateral one in the incisures (2 examples)

Stage VI Head small rounded, bright  
 red, eyes minute blackish, line  
 above mouth white; setae black  
 Body brown, heavily marked with  
 yellow. Vents small, with leg  
 plates shining blue black. Hair  
 black & white, not numerous,  
 short barbed. A broad bright  
 yellow d. band underlying not between  
 segs, but contractile to pass between  
 narrow in front, passing in a  
 line between the small  $\Delta$  plates  
 of c-9th, reaching the dark anal  
 plate. A series of rather broad inter-  
 seg. sd yellow dashes (between ii  
 & iii). A very broad yellow stig  
 band supra-; sub-stig line joined  
 broken behind the spiracle of the  
 line of ground color oblique down-  
 forward across iv and another || one  
 from below behind the; also  
 raised by iii, obsolete, surrounds  
 v in narrow ring. A ring around  
 vi. A broad ventral yellow band  
 almost joining lateral one in the  
 measures (2 examples)

Stage (interpol) Hd 2.1

Pattern, color lost. Head red, the dorsal band as in last stage or even wider interseg. (1 example)

Stage V Head red, eyes + mouth

black. Body blackish, legs  
slant black + white. vent  
blue-black as in mat. Dorsal  
band yellow, narrowed between;  
3d dashes dorsal, interseg.

Sty. band single, yellow, but  
broken across at the spiracle  
and with a few obscure secondary  
marks of ground color. Ventral  
band gray, a little tinged with  
yellow, reaching between VII and  
VIII. In the other (2 headed and  
much larger) the bands are as in  
the stage VI, the ventral band  
even running up interseg. to almost  
join the 3d streaks.

(2 examples)



Yama of *Pseudopsoc lubricale*: X OK  
from Jutil - eating rotten wood  
Feb. 1897

Head rounded, dull black, frons granular  
with short stiff white setae.  $W_2 \pm$   
Body setae short & stiff, stippled, smooth &  
granular at tip. Cylindrical legs  
indistinctly 4-annulate. Head blackish,  
pale s.v. tracheal line pale, sparse,  
small black spin. I-ii brown on long  
fleshy papillae 5-13, i-13 short also  
but i-b on 4 and trace on i at base  
on 4. i-vi, iv behind space, 7 setae  
on leg plate. ii b not seen, others normal  
all perfect single. 5 setae on C-1  
each form a rounded lump. Papillae  
black grey, distal  $\frac{1}{2}$  of ii whitish  
feet normal, on 7 much smaller  
papilla  $\frac{1}{32}$  inch long; ii bent forward.  
Another lighter, dist. whitish, tips of papillae  
i also pale. Black granules distinct, largest  
on papillae.  
Crotchet of feet in single row, very long like  
a series of claws

Mr. Harrison G. Dyer

o MARINE BIOLOGICAL LABORATORY

To Annual Assessment for 1897 . . . . .

Please remit to

LAURENCE MINOT, Treas.,  
39 Court Street,  
Boston, Mass.

Received payment,

Laurence Minot, Treas.,  
by J. A. Whipple

JAN 8 1897

Calc. .32 .49 .75 1.13 1.7 (2.1) 2.6 rat. 66  
.81

629

Alcoholic larvae (A. Koebeler coll.) from Nat. Mus.  
sent up with Apatelas. Seem to be a Calli-  
nephia. Head red, eyes & mouth black. W 2.6  
Body long, rather slender, not small, well  
alternating, is small, with col. shiny blue  
black. Body brown black, a very broad bright  
yellow d. line, narrowed to fine between i & ii  
each segment, a broken sd line, distinct  
- the incision (iii), a broad spiracular line  
(above v) incised above by iv, somewhat notched,  
a fine yellow ring around vi, by plate  
white black, a broad median-ventral yellow  
band. Hair black, small, not abundant.  
Pale from v-vi. Csh marked with two  
blue triangles. Head 1.7 Same Head 2.1 Same  
ventral band yellow in the big ones,  
pale gray in the small one

*Gnophocla latipennis* Bd  
(#58899)

630

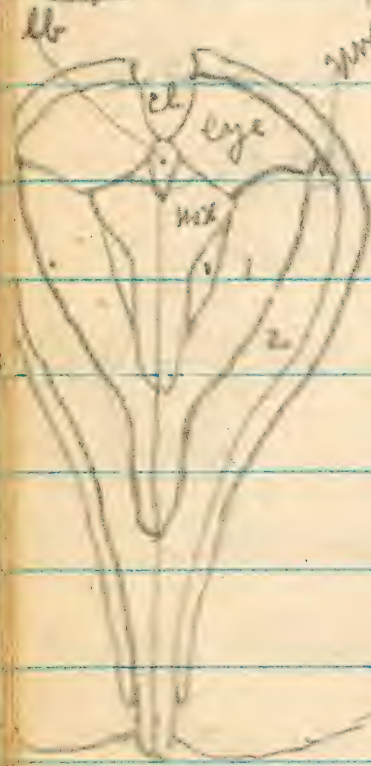
Larva of *Pseudoglossa lubricalis*

Csh 1.0

Larva found in corn in grass under a  
stone. The Centaury Park by March 11  
1897. Head shiny dark blackish, 2 high  
w. 1.5 mm. Body shiny, sordid blackish  
and clay-color mottled, obscure, dark  
legs 2-annulate, tubercle annular, blackish  
in large watery corners areas i-vii  
rough line on separate annulet, <sup>not</sup>  
on 1st annulet, iv+v substy in a single  
watery area, vi post single, vii 3 hairs  
in an anal area at base of foot. Setae  
long, pale, dense at base. On thorax  
ia+ib, iia+iib, iii separate, iv+v, vi  
single haired. Abdominal legs slender rather  
long, expanded at tip, crotchets in a circle  
slightly broken on outer side. The feet blackish

Alcoholic Titaris belgimithialis Murtfeldt from  
Miss. Murtfeldt. Larva Head rounded, flattened,  
small, retracted in 2 up to eyes, clypeal suture  
depressed, upper segment of labium forming a ridge  
pale brown, blackish on the narrow lateral  
angle; w 1.3 mm. Body segs distinct, creased several  
times in incisions, but not distinctly annulate, <sup>13 angles;</sup>  
csh large, bisected irregular marked in black  
Setae dorsal from large flat dark tubercle  
i-iii in trapezoid, <sup>rostral</sup> <sup>iv</sup> lateral, iv+v form a single  
post-tubercle, vi post, vii above base of leg with  
3 setae, <sup>viii angle;</sup> a small secondary tubercle with one  
with seta just before the spiracle at its upper  
corner. On thorax ia+ib, iia+iib, iii single,  
iv+v, vi with one seta. On posterior 6 setae  
as shield, 3 on meso- and meta-tubercle, 2 on 5-8.  
Thoracic feet well developed, armed with setae  
and claws; abdominal distinct, rather slender,  
crotchets in a narrow ellipse broken on the outer  
side, a single row but doubly clawed, a

Slight hump on the outside as well as the  
 same distinct one on the inside, both about  
 Pupa smooth, oblated thickest through 2<sup>d</sup> abd.



seg, slightly tapering each way,  
 rounded, head a little projecting  
 anal end rounded, crenate without  
 projects but 4 radii long  
 recurved stout hooks. 5-6  
 abd. segs unscable. Cases reach  
 to end of 4<sup>th</sup> seg. Spiracles on  
 1<sup>st</sup> middle by secondary which

extend a little beyond 1<sup>st</sup> on legs 1-3.

Light yellowish brown, all the sutures nar-  
 row, & distinctly marked a dark brown.  
 Smooth, shiny, no distinct punctures or  
 wrinkles of any kind. Length  $6\frac{1}{2}$ , width  $2\frac{1}{2}$  mm  
 no maxillary palpi. Second leg seems to join  
 eye, but on careful focusing a small piece  
 is seen to be faintly separated off (mwp)

633 = 409

Egg of *Tolype larvica*? from Dr. O. Seifert May  
 20 1897. Three eggs laid on an old leaf of  
 hemlock. Elliptical, dark brown smooth,  
 streak over with minute scales of width  
 under is reticulation broad & flat, not  
 elevated quadrangular to hexagonal, distinct  
 Size  $1.4 \times 1$  mm, height .8 mm. a little  
 flattened on upper & lower surfaces.



Stage I Body flattened  
 hair dark purple  
 dorsal green  
 gray, a white  
 geminate dorsal  
 line joined by

nodes along incisions; geminate white  
 line below i blotches into yellow in the  
 center of segments; purplish black line  
 above iv and along iii, white between; white  
 line above vi. Hair black & white, long at  
 the ends. 13 largely gray. Head black

a white lateral line, a white transverse line a level of ocelli and white  $\Sigma$  line on vertex, a dash on each side connected by light v-marks in suctories. w.  $8 \pm$  on no secondary hair or warts. it is always very obscure, but present on searching.

Stage May 28 Hd  $1.4 \pm$  ground white with bands of gray dots across labrum & eyes, top of  $\Delta$  bent up each side and succeeded by a patch below in the lateral aspect, a quadrate spot on vertex, a suture notched in front. Body gray with long white line, double d, lat. sub-sty, and an orange tinted sd band. None reach extremities. hair gray, large, produces 3 on abd and 2 on abd, the others lost. a covering of short sparse 2<sup>d</sup> hairs. Tubercle is as completely gone as any.

Later museum blotched with white in museum 3-4, 4-5 and fourth on seg 7 and 9.

Stage June 6 Hd as before 2.2 on abd 2 on abd. warts 2 on abd, spinaculae not very large, 5-6 on

[The other made another stage, but finally came out 3.5 shedding June 30, spun July 10]

On thorax 3, on legs & large warts, 5-6 on ground into lappets. Hair few stiff dark. Fin black v-hair d, numerous & pale s-v same with  $\gamma$  spiculate top. Colors as before, very dark-like, a dark shade on side of p, marks broken, fine line on lappets. Shed June 19. Hd 3.4 Gray dotted, the former pale marks pinkish & hardly contrasting. Body flat, warts i & vi papillae, dark gray, dark like, very spots below i faint. Hair scant & short, long 5-6 with winged beneath which ends. No prominence on 12, i always separate. The uniformity of the dark gray color is broken by a white shade between 4 & 5 - presence of a blackish clouding and a fainter white shade 8-9. Ground fine dotted with black spots, no differentiated lines. 2<sup>d</sup> hair fine, short black, thickly on down to vi.

Spun July 3. Stage July 27 1897  
Tohyse laricis ♀

634

Eggs of *Actina naia* from Dr. O. Seifert,  
May 20 1897. Flattened conical, base  
flat, shining light yellow; D. 7  $\mu$   
Rets. obsolete, consisting of broad ill defined  
elevations between the small round  
pits or hollows of the cell areas. Sharply  
focused the rets. are seen very narrowly lined

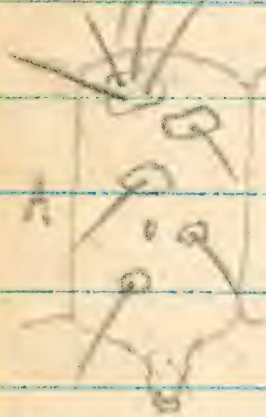
Calc. .39 .65 1.08 1.8 3.0 5.0 cat. 60  
 Found .35 .6 1.0 1.9 3.0

(M) Aug 27  
 1897

635

Little spotted? on trichomy. Fat Yes, 31.9.

May 23 1897. Hd bilobed, pale brown with



long single black setae, w. 35

Hair black, as in figs

Body white, a large

dorsal patch of dark

from on 5, 8-9, 12, a little mottled

by pale. Vents large, black. Hair stiff

minutely unspined, not distinctly spinulose.

Shed May 24 Hd sharply bilobed, pale brown,

a black dash in suture at vertex and pale

white mark each side clypeus; w about .6

Body opaque white, not shiny, large mark

and 5-8-9 and 12 dorsally purplish black.

SV mark and all on 11 are whitish as body.

Hair stiff, bristly, numerous, black. ix small

Hair of 11 sparse and pale? = 289 = 295 = 317 = 388.

Shed May 27 Hd 1 mm bilobed, black, shiny, a

white mark each side 5 and labrum white

Body white, rounded mottled with blackish

d. dorsum 5, 8, 9, 12, 11 conspicuous pale

& weak near dorsal hair long & white 5-8,

small black. white d., tufts with fine on

5 & 12 the latter forming dorsate tufts

a regular little luteicornis = 388. i is a

large wart, larger than ii and nearly in line trans

Shed June 1 Hd 1.8 = black & white V. Body black &

fine white streaked lat, a pale yellow sd (on 10

12) and subdy narrow line black tufts 5 etc

and good white ones 4, 6-7. Ant hair long.

Shed June 5 Hd 3 mm (sh hd 1.9) Black with

V-mark & mouth line. Body black, orange d line

yellow sd part. Tufts 5<sup>i-12</sup> dark brown, 3-4<sup>5th</sup>

6 cream color, collared, black tufts 12

divergent. No tuft 7-11, hair bristly, longer

SV pale, yellow subdy line. Side mottled

Shed June 13 Hd 4.8 (sh hd 2.9) Outer aspect lobes

reddish, white V. Tufts fleshy color upper 5 and

12 brown tipped; cream tufts also on 9 & 10

a series dark red dorsal spots, yellow d. sd

& subdy line etc. Very fine. (Blumen)



636

Entered a young white oak spring  
of the leaves. Found under the  
spring oak *Plumbeocampa*

Hd shiny black with slender pale  
setae, partly attached, w. 1.4 mm ± Body  
translucent whitish, feet & transparent  
dorsal vessel evident, dark tubercle  
large distinct common, the setae  
long, pale, from minute dark center  
normal, 12 + 10. No marks except  
a curved black shade on each  
side of the large concolorous osh.  
Anal plate opaque whitish dotted  
with translucent spots.

Solitary. iii 12 in front of anal  
& little below spiracle.



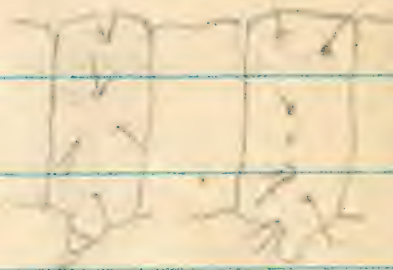
Out March 23 1898 Coll. no. 14965

637

Another Tubercid with 636 but  
different. Head, osh. and 2 spots  
below & thoracic feet shiny black  
Body colorless translucent, stippled  
whitish, tubercle small, concolorous  
& colorless, not evident, setae fine  
& pale but long; normal 12 + 10  
the upper one small and obscure  
but evident with  $\frac{1}{2}$  in. obj. the joint  
12 iii is situated before the spiracle  
on the other seg. normal. The black  
spots or 2 are the stig. & SV marks.

SV only, rather prominent. Anal plate  
as in 636 but less evidently marked.  
Makes a more abundant web than 636

Solitary. w. hd 1.2 ± mm  
Hd 1.7 juv<sup>3</sup> black, osh pale  
with dark edges. No other



marks. Body green, setae pale

Out June 21 1897 Tubercid. Coll. no. 12788

638

Introduced on oak with preceding May  
 1897. Hd held out flat,  
 black, a rounded dark  
 brown spot in  $\Sigma$  and three  
 confluent ones on each lobe, not conspicuous  
 W. 1.2 m. Both the feet black, body  
 dark, variegated, tubercles not large  
 but black and distinct; setae stiff  
 white. A white d and s-s line and  
 white ring around all the tubercles;  
 otherwise ground slaty gray, lateral  
 space velvety brown-black, the markings  
 all blotchy but not blended. Last  
 tiny white dot behind iii suggest  
 a broken lateral band. iii on 12 in  
 front of spiracle. Solitary. The s-v band  
 is broken and slightly orange tinted.  
 Axial plate grayish mottled, concave.  
~~From Holopunt 2, June 3, 1897 all small.~~  
 Out June 25 1897 Cat. no 12790

639

Similar to 636 on buckeye May 1897  
 Hd brown over the lobes, black on face  
 minute pearl job, w 1.3 mm  $\pm$  body all  
 translucent green, anal pl. dotted with  
 translucent, c-sh green, nearly indented  
 by a minute black dash each side  
 side tubercles of 2 green, concolorous. Setae  
 long pale fine moderate concolorous tu-  
 bercles arranged as in 636, iii 12 in front  
 of spiracle, i + ii a thorax. Thoracic feet  
 black apically. Solitary. Not like 637.  
 (Partly spun and long slender wh. larva com. in)

640

2/7/99

Eggs from Miss Sule said to be "Selenia  
calumaria" Woodstock Vt. Regularly  
elliptical from top view, the surface  
flattened but obliquely, wedge-shaped  
somewhat from side, hollowed .7 x 1 m  
"green" dark red when received. Laid May  
25-26 1897. (Shagreen) not reticulated shining  
June 8 turned black, hatched June 9

Thyrs stout with black hooper, abd feet normal  
Hd bilobed, brown black with pale setae  
w. <sup>(5)</sup> <sub>7</sub> Bod all dark velvety brown, abd.  
by plates, light red, contrasting and four  
tiny yellow dorsal dots (paired near light  
areas on post. edge of eggs 5 and 6 - not the  
tubercles!) Tubercles conic, distinct but con-  
colorous, setae short dark. Ant edge och  
and mouth reddish. Pup

by thread on disturbing  
and trunk up to first.



Sheet June 25 Hd. 6 all the same dark

minus black as before but the black light  
paired dot are supplemented by a faint pair  
on 8 and i of 5-9 is produced into a  
rounded prominence. Hd round, pale.

Sheet June 26 Hd 1.2± round brown with a stout  
thick black band on each lobe. i on 5-9 high as  
subapical; white dots on 6 & 7 ant. Body still large  
brown but diversified with gray in d. and sd. d. d. d.  
& dotted bands 5-8 especially into a transverse double  
ring. i 6 and 8 larger than elsewhere and apex brown  
with dark tip. Thorax and 11-13 mostly dark.

July 3 Hd 1.9 very angular (stick-like). Hd flat before  
also reticulate, tipped forward, gray brown, dorsal & ventral  
& venter. Feet of 2-3 appeared & protruded with scutellar  
bases, body angled strongly at 4 in rest. Sclerite 4-7  
i on 5, 6 enlarged. 8-13 much thicker, 8, 9 esp. scutellar  
like collars, tubercles prominent. 10-13 nearly smooth  
dark brown, gray fringed; mostly brown d. sd on the  
prominent points, part of 8 whitish shaded 11-13  
dark gray. Below scutellar gray, brown like  
back. Prominent base of feet 4 bright brown. All  
shaded and dotted. (d. paired pale dot gone)  
Sheet July 8 Hd 2.7 Same; pair of thick basal prongs. Hump  
of 8 & 9 variegated with shades of brown & whitish. esp.  
a distinct dark Δ on i and a dorsal Δ thru 10

Spun Aug 3 folding up a leaf  
Died in May 1898 Cal. nos. 15020-3  
Selenia alpheranaria

241 1.34 1.65 2.03 rat. 51  
 2.19 2.52 2.9 rat. 87

641

*Paronychia achateana*? = 241 = 118 = 63  
 from Mr Beutenmiller June 3, 1897 on  
 oak. Hd 2mm black. Body appears black  
 and is nearly so d. but a little mottled  
 with pale, pale or, a faint not contrasting  
 pale oblique line. Ventr. concolorous.  
 Large black pencil on 2, square black  
 tuft on 5 and 12, gray tuft 6-8, each  
 thinner than in before it. Some feathery  
 hair on 3-4 and long black hair on 13  
 but no pencil. Other hair gray, thin.  
 Retractable tubercle pale.

Shed June 8 Hd 3± Same fine long pencil  
 on 2, few hair not penciled on 13. Tuft  
 5-12 black other hair except feet, and  
 around ret. tubs. thick feathery and as  
 long as the black tuft all over length  
 light gray fine and dense. Some  
 long hair 5-12. Shed June 21 Hd 3.5 (sh  
 hd 2.5) Same. Shed July 4 Hd 4.3 (sh hd 3.5) 51

Second day shed June 25 Hd 3.8± (sh hd 3.0)  
 [Both the day. was during July 22]

Same Beaufort, V. I. June 13, 1897 but very small  
 Hd black 1.2± Black brush 5-12, gray  
 6-7, pencils on 2 slight. Roof blackish,  
 pale or, faint gray s.d. line. Hair  
 very even except long. hair feet black

Shed June 17 Hd 1.5± 5-12 pencil 2, gray hair thick  
 6-8, all same. Ret. tubercle reddish.

Shed June 24 Hd 1.8± (sh hd 1.4) Same, fluffy

Shed July 2 Hd 3.2± (sh hd 2.2) Same

Shed July 13 Hd 4.3± (sh hd 3.1) Same

Spun July 24 Imago ♂ tephra Aug 14  
 [\*shiny + face]

641 Recher\* 1.2± 1.4 2.2 3.1 4.3±

35	.51	.72	1.03	1.47	2.11	3.01	4.3	rat 7/10
241	†			1.3±	1.65	2±		

641\* 2.2 2.5 3.5 4.3±

8 stages is O.K. (see note under 241)  
 Hibernates in stages VI or inter. dated  
 before VI or certainly II, perhaps III, (if  
 512 kept in III which is not specific)


642

Catocala on Hickory, Brown Park, N. Y.  
 May 1897. (Shed twice) Hd 3.8 pale slate  
 gray with numerous short white vertical  
 streaks. Setae single, coarse, rufous on  
 black. Body somewhat flattened feet  
 on 7 & 8 much smaller than the others.  
 Setae from very large tubercles, coarse  
 distinct, perfectly simple and normal,  
 only 3 on leg plate. Anal feet spreading  
 5-8 "roots" present, small white sparse  
 hair-like processes, not 2' hairs.  
 Body back gray, brown mottled with black  
 dots forming powdered broken sd, lat  
 and slip line. Tubercles orange with white  
 rings. A dorsal hump between ii on 9  
 and ii on 12 much enlarged, conical  
 like him all looks in light red, tubercles red  
 center creamy white a dark brown patch in  
 center of each segment.

Spun up among the leaves June 14.  
 Out

643

Notodontan eggs (2) on young leaf of white  
 oak on upper side Belknap 2. J. June 3  
 1897.  $\frac{2}{3}$  spheroidal, base flat, clear, slightly  
 shining, translucent pale yellow, stipes  
 white fringed toward vertex, but with a  
 round large not fringed micropyle. D.  
 1.05 mm. Under  $\frac{1}{2}$  inch distinctly reticulate  
 with rather large regular rounded hexagonal  
 raised lines, linear, widening a little at  
 the junctions and more elevated on the  
 upper part of egg except in the round  
 micropylar area where they are suddenly  
 flattened and obscure and also smaller.  
 Hatched June 14 Schizura sp. Hd 10.0 pale  
 brown, 7 mm Body yellowish, red on 5, 7  
 and 12 and 5-8 except the large conical  
 tubercles. Setae long white. 12 branched  
 and anal feet held up. (The larva got  
 out, but doubtless = ipomoeae) [found again]  
 Shed June 21 Hd red-brown & greenish white

the latter in spots  Body green red  
 and yellow, red d. in 5, 7, 9, 12 and  
 all along the sides, a very narrow red d.  
 line. Tubercles large, conic, concolorous w  
 a little testaceous, setae long, pale.  
 Shed June 26. Like 398 III q.v. Hd 1.4 mm  
 next day regular little spines. [Put out]

Found rotted in May, 1898. Evidently out  
 in fall before.

Zylva antennata J.S.S. Nov 15 1898  
 644 = S. unguicula  
antennata

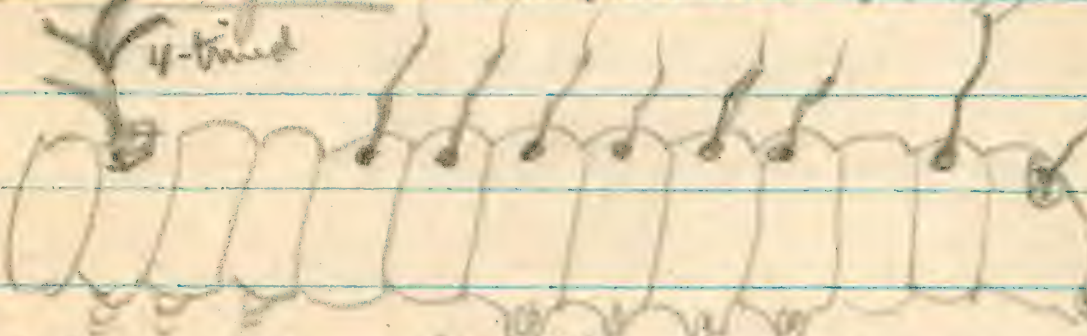
Noctuid commonly on planted ornamen-  
 tal maple at Belmont G. S. June 5 1897  
 Several on a leaf, three more for a space  
 feet normal, 12 slightly enlarged, setae  
 single normal, ii thin, well separated  
 ii to very weak, iii, iv in line; no i seta on  
 abd. leg plate, that one ant. Light green  
 narrow dorsal, narrow but distinct red,  
 narrow supra-sty, subconfused with a  
 head sty, white line. Tubercles white  
 prominent. Sty band a shade yellowish  
 Setae pale, distinct & rather long. Sub  
 striae & feet green, only marked by the  
 white v & vi. In some dorsal line absent.  
 Hd. whitish green, ocelli dark W. 1.5-<sup>1.4</sup> mm  
 Shed June 6 Hd 2.2 Same spiracles faintly dark  
 rimmed. Hd. green D. line distinct. Leg  
 increases folded June 13 Hd 3.3 Same a little  
 more pronounced. Hd all green, d. line head fulvous  
 some white dot a green on sides. Sty band  
 faintly yellowish. Spiracles black rimmed June 21 dorsal  
 5th inst. formed not called.

*Asaphidius (Dicosia) thaxterianus*  
NO **Not pub** 645 (Oct 27 98) JKS 201898

Looper? on army oak, Belknap June 6 1897  
a little short pair of feet on 9, otherwise  
true looper in habit and appearance.  
Smooth, green, marked with white.  
Setae very obscure, small, pale, im-  
mal. Hd whitish green. Body whitish  
green, dorsal dark, a distinct straight  
white s-d line & space with irregular  
crinkly dotted white marks; a narrow  
lateral white line the **margin**  
obscurely white blotched. White mottling  
on 1-5, scarcely perceptible on 6 line  
above on fold. Spiracles finely black  
ringed. Rest not straight on back of leg.  
Feet on 9 have 5 long crotchet on feet side  
1 on plants; there on 10 a set of hooks before  
& behind, broken on inside by large plants  
all down end in June. More June 13 1898  
Out May 1898. **col no 15024** <sup>it below</sup>  
This is obviously *Asaphidius pomatorius* <sup>of spinnet</sup>  
1892 Nov 15 1900 - see coll.

646 = 203

2 eggs on under side black oak leaf Belknap  
L.S. June 6 1897. Less than hemispherical  
flat at base, clean pale green, not shiny  
and opaque. Diam 1.2 mm, height .6 mm  
Rets regular hexagonal, narrow on sides,  
the sides casting shadows and the cell  
areas darkened on the side towards light

Hatched June 14 Little larvae. Hd brownish  
4-tined  dark  
brown  
Body  
more red, yellowish in recesses and on  
Hd. Feet & leg plates dark. Aerial feet up  
Horns long 5, diminishing to 10, long 12, short 13.  
The larvae is very uniform all red brown like  
This June 19 Hd large, high, narrowing above,  
scarcely notched, a small, all dark brown  
brown, w, 1 mm C. horn 2 short horn point, other  
gone. Body all uniform brown, smooth, uniform  
small feet elevated. Dorsum a little darker

from the side, abd, feet 7-10 pale, a pale patch  
represents tubercle i on 12 (St. hd. 6). Later a  
pale s-d line is indicated and end im-  
mately on 11.

Shed June 25 - Hd 1.5  $\pm$  Short brown tipped c-  
horn. Free s-d yellow line, faint white  
dorsal and ventral lines indicated (see 203)  
Dorsum all filled in with brown and  
dorsal side on 7 and front of 3, 4, 10.

Shed June 27 - Hd 2.3  $\pm$  = 203 but a heavily  
brown blotched juv. imago. - Chorn short.  
(Put it out)

IV IV 15  
1950

647

Time noctuid on white oak, Berkeley  
L. S. June 7, 1947. Hd. brown. Brown  
dotted with white, a black patch  
each side dorsum with a brown band  
of behind and narrow or single  
of lobe widening above to suggest an  
elliptical pale enclosure on side  
on 3, 3 mm. Body various brown, a little  
greenish tinted, a series of large s-d  
creamy white patches 2-14 on thorax  
covering sides of c-sh, setae ia-iii, on  
abd. i-iii (somewhat trilobate) and  
whole of anal plate. Tubercles and  
spiracles white; setae normal, single  
distinct but fine, pale - stinacci well  
separated and all present.

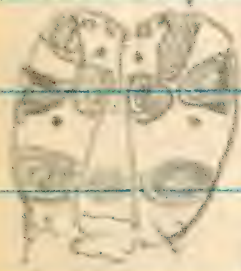
name of 645?

Yes!

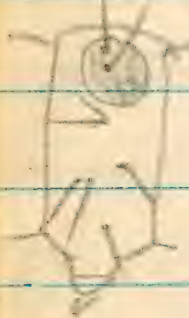


648

Pyralid or Tortricid resembling 638 a white oak leaf miner L. I. on young leaves. Hd white, curiously spotted with dark brown.



W. 1.2 mm 8th instar marked the large spot at the sides, a round conspicuous 3rd black spot on <sup>chocolate</sup> 3 and tiny one on 4 and 13. Body brown and white. Dorsum white with geminate fine brown d. line and black i and ii. A very broad brown lateral band reaching to iii centered by a series of white dashes, dividing it in two; iv+v, black, no marks below the region white with feet.



Tubercles all black, setae and very fine white.

649

With preceding but on excavating root the same. Slender, with slightly tubercle-like on the young leaves. Head & large summit shaded all shiny black. 1 mm. The feet black. Body brown & white but different. A double brown lateral line the tubercles well separated (s-d, below ii and supra-sty, iii) but connected by seg. oblique bands, the 3rd pair also connected over dorsum by a broad irregular band in the center of each seg. which arches tubercles i and ii. Venter white. Anal plate nearly black. Tubercles very small, dusky, setae pale. Joint 5 actual chinks from the outer edge of 4 white and on 13 tends to be produced into a d. line.



650

Like 649, same but 3 white ant. instead of all brown, 4 also white ant. Three straight brown lines on each side, ad-sternal (above i), subdual (below ii), superficial (below iii), all the rest white. Thoracic feet, head and large osh black. W 1.1 ± Tubercles small, black, setae white.

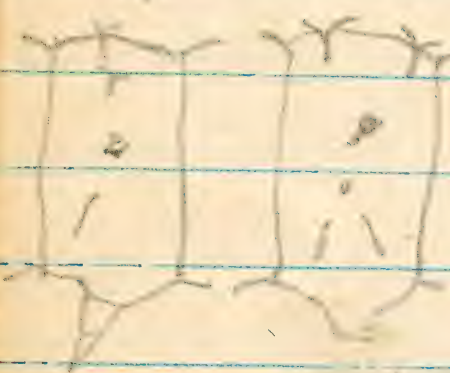
Out July 7 1897 Cat. no 12827

651 = 534 = 25

Eye back leaf white osh. Hatched 9 9. June 1897  
 $\frac{2}{3}$  spherical, base flat, distal shiny white, rest  
pale of osh and not very greenish. Ret. hexag.  
irregularly distinct, regular, all in a row dark on  
the light side. D. 1.2 H. 7. Like 646 but white.  
Hatched June 13 all green, looks like *Madata*.  
Setae pale, no tubercles nor anything else  
dark. Head a shade more testaceous than  
body large, higher than 2.  
Shed June 18. Hd 1.4 (sh hd .7) green with  
yellow s-d line. See 534  
Shed June 23 Hd 2.2 (sh hd 1.4)  
[Ears *Madata*, put it out]

652

Skipper in kitchen in folded house



Brents Lane 29 June

12 1897. Egg  $\odot$  with 16

flat large ribs and fine  
minute cross striae reg-

ularly spaced  D. 8 laid on upper side

Shell white. Larva Hd. 4 orange, shaped

round, slightly lobed, the simple crown

white setae with enlarged tips. C. 5th

small faint orange. Body greenish yellow

a light orange tinted, segs. 5-6 annulate, skin

punctured, setae white, glandular tipped

i and ii fuscate, joint 2 not smooth.

(Do not see vii on thorax or abd.)

Shed June 16 Hd. cordate lobed, large black, rough.

Neck small, body all ochre yellow. Root hd.

Body with numerous short 2<sup>d</sup> setae with enlarged

tips, white. Hd. 6 Body segs. fine annulate, not

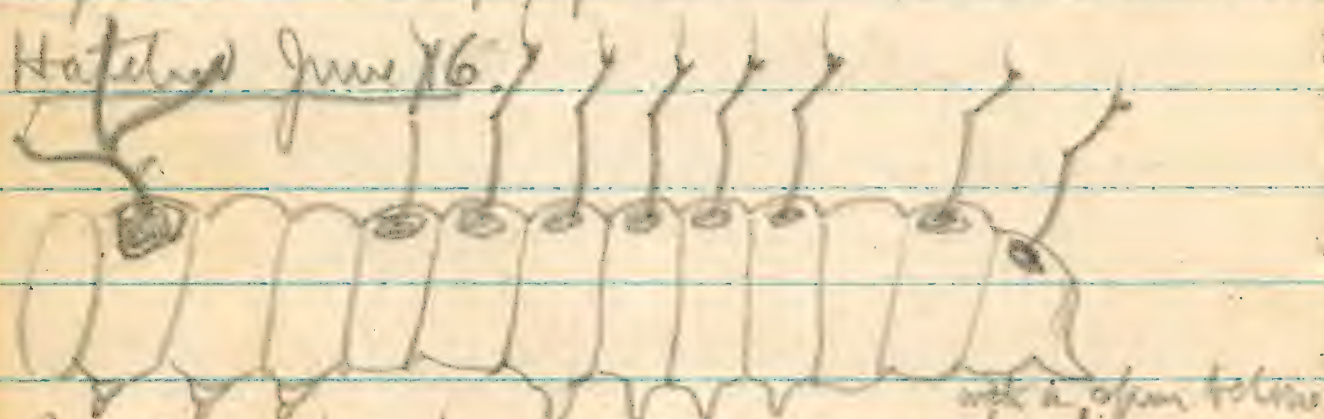
shiny, no markings, neither shield nor plate dif-

ferentiated. (damaged)

653 = 110 = 64

Horn? egg in lichen, New Haven 2.9. Jun 12  
1897.  $\frac{1}{2}$  spherical, regular, large, semiopaque  
pale green, dull, not shining. D. 1.4, H. .7 mm  
Ret. small regular hexagonal the pit  
rounded concave base, giving a shine in one  
side as well as shadow on light sides;  
edges not sharp, pitted rather than reticulate

Hatched June 16



Regular "horns" not 3 times on each here,  
these i 5-11, 12, 13 of equal length.

Horn 1 plate horn. Body yellow, red streaks  
on the sides and around i 5-7, 12. Anal  
feet divergent long. Hd light brown.

Larva without yellow dorsally in two places  
and the sides beautifully finely streaked in  
red lines. Shed June 20 = 110 (Nov 28) Shed June 23 -

Hd 2.2  $\pm$  (th. hd 1.2) Horn 4 / 10 (Shed out)

Out Aug 3 1897 Crippled ♀ *Heloverca unicolor*  
654

Very large Notodontid? egg on black oak  
(*Q. tinctoria*) Belfast June 13 1897. Slightly less  
than hemispherical, base flat, 1.4, H. .6 green  
around the base, the whole top covered by a  
very large, irregular edged vignet brown  
patch. Ret. broad sharp flattened and  
shiny hexagonal rather sharply angled  
and somewhat irregular Cell areas not shiny  
The pigment is in the egg, not laid on outside

June 14 pigment broken up by pale patch  
Hatched June 16 Fine 'horn' with 4-tined antler  
and all other i 5-11, 12-13 of equal length.

Very and large as *brundata* (653) Hd, 5  
pale brown spotted. Body predominantly pale  
green, slightly yellowish. A narrow red line lat.  
line on thorax giving a dorsal trans band on 5;  
a band near 7 containing a lat. spot of green color,  
a faint lat. red line on 9 and a band on 10 and  
11 like the one on 5. This feet black, legs and  
anal pl. dark brown. Horn on 2 row, the

separated by a narrow black line in water and lobes  
 lobes bent up, but tapering, above w. 3.5 ±. C-horns high, very  
 thick, smooth rounded shiny black, brown at base. Body  
 fleshy greenish, orange tinted, broad velvety brown d. 7-9, then  
 thin black, the highest are serrate-spiral  
 on its upper side. Body horns with intercalary  
 black, lateral pale spiracles in one plate except

on 12 and where there are no horns. Several  
 vi absent, several on leg plate. Anal feet cloudy,  
 later the round spot around iii becomes distinctly white  
 the markings have a general round instead character.  
 Brown get more distinct and define round, d and lat.  
 rounded spots on all the legs.

Shed June 21 Same! Hd scarcely higher than 2 not high, brown  
 on each horn on each lobe before joining above. Body  
 squarish, not notched. w. 1.2 mm Body yellow & v. brown  
 brown a narrow yellow d line widened into a rounded spot  
 5-11, 13, forming a  $\nabla$  mark on 11, absent 12. A yellow s d + lat  
 spot on 3 & 4, large lat. spots 5-13; mottled yellow and  
 brown 5-6. Horns brownest on sides 5, 7, 10. Leg plate black  
 with short white C-horns 3-5 and 2 pale axillary with  
 brown tip. Anal feet long dark brown elevated.

Later 8-9, 12 arches Notendrupalata and a pale  $\circ$  patch  
 before each 5-7 and  $\triangle$  9-11. Shed June 22, not high  
 rounded, not lobed green yellowish white blotched with brown  
 shades, a broad dark chocolate band from base of antennae to  
 bases of each lobe entire horn w. 1.8 mm. Short c-horn with one large  
 and 3 smaller ones on top reaching above top of head colored as before. Body  
 chocolate brown & pale yellow, very mottled. Dark d. horn 2-13, widest on  
 apex pale patch 4 feet-7, a band oblique from 1 to foot 4, one backward on  
 foot 7. bands on 9 run to 11 s-v-e joining side spiracles, on foot 10  
 to foot on 10; a patch 11-13, widest on 12. Pale parts of sides and the  
 d. pale spots mottled with light brown bands confluent to spots  
 and with the markings breaking the pale color into rounded spots.  
 anal feet inf. 12 all feet enlarged. Later patches between horns  
 d. 4-7 and 9-12 white with red line, sides mottled greenish yellow.

Shed July 5 Hd brown 2, length 7-10 high thin  
 horns as before Hd 2.8 whitish with  
 purple mottling, purple spots on each  
 side, margin both sides brown line. Body horn pair large mottled, shaded  
 4, 7, slightly 10 and d. spots white patch 2 between horns 4-7, 9-11  
 with minute red central line. Spot patch obscure, faint  
 and diffuse just only on side 9-12  
 Shed July 5 Hd creamy white at face, dorsal white on top

sides all smooth, abundant with brown dots up to  
 band 3 s-d to 4 feet, 6-8 d to 7 feet and reaching on  
 each seg. obliquely 7-8, 9-9, 8-10, 9-11 and lastly 9-12  
 the one ending d. patch. Below horn a small white  
 patch; then a diffuse mottled d band wider and enclosed  
 a white d patch. 5-7 with a central double brown ellipse  
 all dark red down 655

Apatele egg on *Quercus* Redford VI 13  
 Flattened spheroid of sphere D 1 mm, H. 3 mm  
 Circular, ribbed 45 ± free, not dividing  
 in number till 1/3 from apex when the  
 alternate ones end free, then passing  
 on, bending somewhat, ending in a circular  
 ridge around the margin. M. reticulate  
 highest in the center. Ridge wavy, the  
 waves between like waves, no striae.

Hatched June 16 Whitish, colorless, a large, buffish  
 horn d spot on 2, 4, 5, 8-9 and smaller on 12  
 Hd pale with a similar spot on each lobe  
 mouth horn; w. 3 mm. Tubercles large & dark  
 smaller elsewhere, normal, single,  
 stiff i-iv black, v white a small white  
 spot on pale leg plate. On-thorns ia + ib, dark  
 ii a black ii' a small, pale as the below:

Shed June 21 Hd whitish, a brown spot above and 2 below  
 on the face of each lobe. W. 4 Body white, dorsum  
 dark purple brown 2, 4-5, 8-9, 12, that on

Another creamy patch 9-12 with century double line, the patch diffuse, top of feet, dorsally into a purple brown d. line 12-ant. plate. anal feet up

2 double, warts concave with a crown of granular tipped hair and central long seta, 2 acts as i-i-iii black. 2<sup>nd</sup> hair black in spot, white in white ground. Hairs 9 & 11 pale, rest granular. Late spot in head complex behind, heavily pointed lobes marked white, free part of eye white d. patch on the pale eye July 25 Hd. 8 white, 4 brown-black spots in front and a streak of gray of neck, brown d. patch on 2, 4-5, 8-9, 12 consists of faint sd line, enclosed white spots present in measures. Sides whitish.

Next same same granular 2<sup>nd</sup> hair also from skin July 29 Hd 1.5 square lobed, apices reddish and white, 4 large black spots in front and another on sides. Red, whitish, dorsum almost all shaded with dark brown, hair 1-2, 4, 5, 8, 9, 12, the other segs. yellow; a broken pale d. line! Hair black d. white 5-8, the point of a both long cone tract and body gland tipped and concolorous with the marks. Late dorsal line brownish hairy, broken pale d. sd line, yellow patches around; on 3, 5, 7, 10, 11, 13.

July 22 Hd 2.2 whitish with brown mottled dots hardly separated into the 4 face spots which are now confused. Apices light red. Body gray finely dotted the light segs. yellowish center of d. but not markedly darkening. Yellowish white d. and sd lines. Hairs few & dark d. abundant with the white segs; the skin d. with a few sparse black spinules. White hairs all spin pointed, few [cf. lobeline]

July 7 Hd 3.5 very little blackish 5 & 12 d.

July 12 Hd 5.5 Same. (Hd. hd 4.2)

Same with a fine lobeline July 16 (taken for specimen)

Eye 5 cut 8. Lockjaw 23  
Jm 656 (left) 108  
9m 656 A 136  
2m 656 B 78

Range June 10-18  
677 out

$$656 = 256 = 121 = 12A$$

Packardia geminata (geminata) out from across June 10 1897. Night 10-11, 11-12 molting came to cage at 9:30 P.M. Night 12-13 left skin open 2 P.M. in AM. no mated. Egg, night 13-14. ♀ did not fly till after mated.

Egg: Rather narrowly elliptical, flat as usual, translucent whitish in glass, roughly shiny like a wet spot on back of leaf. 1.3 x .7 x .1 mm. Ret. rather distinct all over egg but very much rounded like circular contour. Shoulder pits varying a little in size. The elliptical granular translucent center is surrounded by a transparent narrow zone.

Embryos follow similar course to Eupoecia 626 begins to hatch June 26 about noon. <sup>Hd. colorless, eye black, mouth strong!</sup> Rindless,



thick, tail rounded, spines all of moderate width 5-8 small. Translucent whitish. Spin transparent short, clubbed tipped ① 4, 7, 9 leaving out and ② 5 up. 2 not much retracted a large coil with several setae. Spines

656A Annotina ♀ out June 13. Mated night 13-14 with ♂ from cocoon. Good eggs night 14-15 but inf few about 25. More 15-16. First hatched June 27. <sup>Same!</sup>

656B Annotina ♀ out June 17. Mated night 17-18 with ♂ from cocoon. 78 eggs night 18-19. Hatched

all alike no knots. Dorsum and sides a little

Date	L	R	Notes
June 26	0.9	0.9	milch
" 27	1.0	1.0	cat
" 28	1.1	1.1	"
" 29	1.3	1.3	"
" 30	"	"	"
July 1	1.7	1.7	5/8
" 2	1.6	1.6	"
" 3	1.7	1.7	5/8
" 4	1.4	1.4	cat
" 5	2.2	2.2	"
" 6	2.5	2.5	"
" 7	2.3	2.3	5/8
" 8	2.3	2.3	5/8
" 9	2.0	2.0	cat
" 10	2.2	2.2	"
" 11	2.5	2.5	"
" 12	2.5	2.5	"
" 13	3.1	3.1	"
" 14	3.1	3.1	5/8
" 15	"	"	"
" 16	3.0	3.0	"
" 17	3.6	3.6	cat
" 18	4.2	4.2	"
" 19	4.8	4.8	"
" 20	4.8	4.8	5/8
" 21	"	"	"
" 22	5.3	5.3	cat
" 23	5.5	5.5	"
" 24	6.1	6.1	"
" 25	6.6	6.6	milch
" 26	6.6	6.6	5/8
" 27	"	"	"
" 28	"	"	"
" 29	7.0	7.0	cat
" 30	7.6	7.6	"
" 31	7.9	7.9	"
July 8	8.3	8.3	"
" 9	9.5	9.5	5/8
" 10	"	"	"
" 11	"	"	"
" 12	9.6	9.6	cat
" 13	10.1	10.1	"
" 14	11.5	11.5	"
" 15	11.5	11.5	"
" 16	12.5	12.5	"
" 17	11.8	11.8	"
" 18	11.1	11.1	"
" 19	"	"	"
" 20	8.0	8.0	late
" 21	7.2	7.2	cat
" 22	"	"	"
" 23	10.0	10.0	"
" 24	10.2	10.2	"
" 25	11.3	11.3	"

gouged, the segments ridged. Skin smooth light paired seg. hollows shown in part light near the center of d. groove. Another showing on ⓐ very slight and near base of joint of legs only, 3 setae white, 3 has feet. Center of setae & extent from basal  $\frac{2}{3}$ , somewhat incomplete. (The space \* is clearing angle while it is a pair in red-crow, same structure). Alternation in ⓐ very weak, nearly straight line. July 23 Rattle elongate elliptical tail rounded quadrate, 3 truncate. Spines normal ridge ⓐ distinct, the dorsal & sides concave, grooved. Hd retracted, 2 part, 20. Setae dark, at distal long, sharp pointed, 2 on ⓐ and only one on lat. of 4. Skin rather densely punctured with clear conic granules, not quite contiguous, irregular produced into 2<sup>d</sup> spine. Depressed space behind indicates, ⓐ as slight hollow, not definite tubercles & granules and very small. All pale whitish pink, legs green weakly tinted. Still July 8 retraction elliptical, elongate, tail short, square. ⓐ lat spaces broad setae retracted. Ridges marked, high, prominently tubercular, the setae blackish black at ⓐ and sharp pointed. Pale

Date	L	R	LR
June 26	0.9	0.9	cat
" 27	1.0	1.0	"
" 28	"	"	"
" 29	1.3	1.3	"
" 30	1.4	1.4	5/8
July 1	1.7	1.7	5/8
" 2	1.6	1.6	"
" 3	1.7	1.7	5/8
" 4	1.4	1.4	cat
" 5	2.2	2.2	"
" 6	2.5	2.5	"
" 7	2.3	2.3	5/8
" 8	2.3	2.3	5/8
" 9	2.0	2.0	cat
" 10	2.2	2.2	"
" 11	2.5	2.5	"
" 12	2.5	2.5	cat
" 13	3.1	3.1	"
" 14	3.1	3.1	5/8
" 15	"	"	"
" 16	3.0	3.0	"
" 17	3.6	3.6	cat
" 18	4.2	4.2	"
" 19	4.8	4.8	"
" 20	4.8	4.8	5/8
" 21	"	"	"
" 22	5.3	5.3	cat
" 23	5.5	5.5	"
" 24	6.1	6.1	"
" 25	6.6	6.6	milch
" 26	6.6	6.6	5/8
" 27	"	"	"
" 28	"	"	"
" 29	7.0	7.0	cat
" 30	7.6	7.6	"
" 31	7.9	7.9	"
July 8	8.3	8.3	"
" 9	9.5	9.5	5/8
" 10	"	"	"
" 11	"	"	"
" 12	9.6	9.6	cat
" 13	10.1	10.1	"
" 14	11.5	11.5	"
" 15	11.5	11.5	"
" 16	12.5	12.5	"
" 17	11.8	11.8	"
" 18	11.1	11.1	"
" 19	"	"	"
" 20	8.0	8.0	late
" 21	7.2	7.2	cat
" 22	"	"	"
" 23	10.0	10.0	"
" 24	10.2	10.2	"
" 25	11.3	11.3	"

translucent whitish green, a faint white line under each sd ridge not reaching the extremities. Skin covered with minute, small, conic granules, no spine anywhere even on the tubercles. Depressed space small, shallow, not sharp edged, smooth in bottom. Still July 13 whitish green, a white line under ⓐ & little narrow setae stiff, black tipped, skin rather densely low granules. Dep. space very obscure. Tail produced, a little tapering and slightly notched. Late sd line yellowish and white irregular ring represent (1) dep. spaces centrally. Still July 20 Elliptical tapering a truncate produced tail. Tubercles isolated, setae small, set forming the ridge. Sd line yellowish

July 26  
1897

6 lined white 3-13 and dark edged, (1) dots  
white 4-11; (4) white ringd center. Skin green  
to tan, small, contiguous, crossing the dep. space.  
Shed July 18. Head and shape good. Tail, lateral  
claw, setae small and slender, pencils  
dense, not quite centripenn. Whitish green,  
line converging, free, (1) (1) as white dots  
[656A shed July 19 different. Ridge rather  
markedly tubercular with distinct line,  
dark setae. Shape about the same, but  
much less firm, not (black) whitish  
green, chrysalis. Dep. space as white dots, (1)  
to 1, into green center. 1st line white 3-  
tail without distinct edging. Skin pencils  
dense, chrysalis about the same.]

Aug 3 10.4 cut | Aug 5 all livid to spin.

[656A shed Aug 8. Glanular dots all pale  
than ground at first. No setae. Aug 11 all  
lived greenish, still eating. To spin

657 = 594

An Arctia in the white sand in piney  
woods, Brookhaven June 18. Body uniform  
dull gray, waist and plate black. Hair  
stiff, black, short and uniform except  
from ii there, iii and leg and 18 where it  
is long, forming a curious ridge of hair  
the whole length on the middle of each  
side. Hd black above, 4 setae brown, w  
1.6 ± Shed June 28 Hd 1.8 (sh. hd 1.6 ±) same.  
Imago July 23 1897 Croatica opella  
mated with ♂ in cage with ♂ July 28-6.



8/11/17  
117

658

Egg laid by ♀ *Pyromorpha dimidiata* from  
Brookhaven June 18, 1897. Elliptical, flattened  
above & below like beamed egg with  
more elongate & cylindrical than those.  
White, moderately shining but looks soft  
& thin skinned. L 1 mm, height & width .6  
Rets. distinct, regular, much rounded, in  
series of contiguous circles. Hatched July 1  
Hd <sup>paraclypeus</sup> rounded, black; legs thick, slightly flattened  
grayish white, hair straight pale, rather  
numerous. Tubercles concolorous. W.S. ± not

low, a group of hairs from the  
anterior bases, colorless.  
finely dotted spinulose, a  
clear bulb at base of each (2); spin. finely  
spinulose. Hatched at back of oak etc  
shed July 13 Hds 4 retracted black shaded  
over vertex lobes, 4 pale, minute prominent brown.  
Hair numerous from legs, low short, stiff  
pale (black), black tipped. Vents colorless, body  
shiny, the all is pale gray. In 2 weeks  
lost weight, hair abundant with small bulbs.



659 = 655

*Apatela* eggs on *Q. coccinea*, *Q. tinctoria* (4)  
Brookhaven June 19, Low rounded & circular  
flat, distinct, 45° radial to ring at inner  
pole, wavy, non-confluent, diminishing  $\frac{2}{3}$  of  
D. 1, h. 3 um (Like 655) Translucent white.  
Hatched June 21 Like 655. q.v.  
shed June 25 Hd. 5 Like 655. i with 2 hairs.  
shed June 29 Hd. 9 Like 655. III

(Next set)

658 July 14 eating the above. Blended part of a stalk with leaf, pinky  
the feeding stalks, gray brown & subventral of col. caused,  
later a faint whitish red line along @ seen against the  
dark food. A macron dark brown & line and trace of  
smooth, a wide yellow & pale band. (The worm's  
head July 20. Hds 7) light brown with large black eyes;  
strongly retracted. Red thick & stout, dorsal line  
with large capered dark brown brown narrow, marked  
color dorsal grayish & dark brown narrow.  
line vent tub. flat but very large, @-@, hairs  
rather pale but in general concolorous, stiff, about  
pointed with clear basal bulbs to spinula  
forming equidistant rings representing the hair  
curiously ( $\frac{1}{2}$  in. Hf.). Skin dorsal minute spinulose  
the large paleish white give the appearance of  
mud faintly pale red & lat. bands Hair coarse  
but straight, broken lat. dark brown line dorsal.  
shed July 31 Hds 11 in a low light brown eye black  
capex & covered large dark brown & sh. black  
as before, large flat vent pale, the

660 = 655

Apatela egg on Q. carya Brookhaven June 19 97  
Low curve  $\Delta$  flat at base, 45° - ribbed or  
rather pitted, wavy, no cross striae to an  
irregular micropyle ring. Ribs distinctly  
in two series, inner confluent. D. 1.0 H. .4 m.

Nonlucent white Hatched June 21 Like 655.  
And the dark wavy faint, mostly confined  
to the large vent. Setae i-ii black, rest pale.

Shed June 25 Hd .5, four black spots. All  
like 655 II q.v. [Jaws more from egg  
like 659. Hatched June 21, nearly white, the  
dark wavy just indicated as faint shades.  
Other spots quite distinct]

Shed June 29 Hd .8 mm Like 655 III and IV

(Out ant)

Body above as dark to brown narrow line  
d, and s.d. Hair abundant, short, whitish,  
a little longer on and at ends. Pubescence  
at very base of the vein, shaft represented  
by dark tufted. There are no transverse bands  
as between the vent the body is not very dark  
shiny? Apr 10 This is all same. Short regular  
clerical hair with basal bulb. Vent hairy

661 = 655

Apatela egg on Q. carya June 19, rounded, subcircular  
low, flat at base, trans. white  $\pm$  60 ribbed  
sub-confluent dimidiate, the ridges beaded  
fine, rather than wavy, no cross striae.  
Micropyle area irregularly ringed. D 1 H. .3

Hatched June 21 Like 655 q.v.  
Shed June 25 Like 655 II. 2 setae from i Hd .55  
Shed June 29 Hd .8 Like 655

(Out ant)

in large pale gray areas which are off dark  
brown they are dorsal, very sd and broken  
stippled brown. SV region pale brown  
irregular dark, obscure connecting bands.  
2 pale  $\pm$  faint, dark behind, covering head.  
The most of vent the s-v line. Feet pale.  
Hd brown eye black.

Aug 28 L 8.5 W 7.5 H 3.2

Took Aug 27 uniformly dark purple brown  
close color of dead rotten leaves.  
A 

1	2	3
4	5	6
7	8	9
10	11	12

 Vent large but hair very short and  
all solid brown vent area pale  
pale and no wavy but a faint  
darker dorsal line and irregular whitish  
one between vent D and V. Hd 1.5? (collected  
as I measure head & allow for skin) 2 largely  
black on top. Skin minutely shagreened. Hair  
represented, sub-baculated, a slight obscure  
irregular enlargement at very base.

Apatela egg on wild cherry, circular, less rounded, trans. white. D. 1.1 H. .25, rather coarse, ± 40 ridged, subconspicuous dimpling, scarcely raised, smaller at micropyle which is reticulate, flat, without rim.

Hatched June 20 whitish colorless, first green, Hd. whitish 3mm. Setae, black the rest white, single i-v and leg plates, spinulose.

shed June 27 whitish, first green, hd 5 hairs less conic, stiff seta and crown of small swollen tipped hair spreading off at apex. Central seta i black, all else white.

shed July 11 Hd 1 fleshy brown, a dusky patch below each lobe. Green on sd, white line, joined in patches before i and longer behind 5-12 hairs per plate, 1st small brown glandular tipped.

shed July 15 Hd 2.2 seen heavily streaked brown midlately, a red line extending to posterior apex, yellow sd. Head 2-13 feld in with brown v each seg 3-12, the edge of yellow reaching 6. D hair fine dust, but plus + 5 v. 2<sup>o</sup> No glandular hairs. Setae with clear long spinous spinules but very little of hair dorsally. 12 high

shed July 19 Black with red dorsal line

shed Aug 4-11 edges velvety black. Hd. black 3.6mm. Hair i black, rest pale with grey hair. Abundant distinct long 2<sup>o</sup> hair from tubercles.

Notodonts egg on *Q. coccinea* like 646 but shiny and with larger reticulations. Diam 1.2, h. .6 mm. flattened, rounded  $\odot$  distinctly smaller at base: not hemispherical, shiny pale green, translucent and looks rather like a drop of water but opaque. Ret large, distant & narrow, hexagonal, dark in the bright side light ( $\frac{1}{2}$  in obj.) while the flat cell areas are shiny.

Hatched June 26 like 646, but hairs i on 5<sup>o</sup> widely divergent, the rest erect as in 646 4-branched rather on 2, 5-10 i from unpaired plate, the two shorter feet; 12 from paired plate, long, 13 short. Body brown red, a broad lighter Hd. Hd high, rounded brown. Setae on 5, no. 5 mm.

shed before July 3 Hd 1.1 brown with darker brown vertical band. Body brown and i side streaks 4, 7, 10 a narrow white d line and yellow sd are broken at 11. Noes

Calc 28 41 54 83 1.19 1.7 cut 7/5  
(Probably same as 747 g.v)

664

Very rotundate egg on *P. alla*, *P. cocconia* Bush  
larva, June 21 (1897).  $\frac{2}{3}$  spherical, shiny, trans-  
lucent pale yellowish, nearly clear and on  
the green leaf showing no color, almost  
like water drop but for turbidity. Vein  
rather coarsely reticulate, line fine, dark  
on the bright side, the cell areas showing  
D. 6, h. 4 mm. Singly on back of leaf  
Also on chestnut, Port Jefferson L.I., Fort Lee, N.J.  
*Hatched* prolegs 6. Larva semi-looping, prolegs  
abd feet 9, 10, 13, very small, and used on  
7, 8. Hd faintly brownish, eyes black, mouth  
brown. Body tubercles 12, a little enlarged  
post by transparency. Tubercles large, black  
1-8 normal hatched; setae distinct single dark  
shed into smooth pale brown larva  
with large brown normal tubercles  
On the dead leaves of oak, slightly  
with long hairs together. (July 2)

IV  
July 4 Hds 8 Rounded, obscure corded

of the supplementary line of *guttatella*.  
Current fact of. = *guttatella* 646  
(Note 646 has been to divergent in I also)  
(Found next July 7)

658 Shed Aug 28 VII. Hd about 1.5, horn 1.8 mm  
pale brown ligula in antenna, 2 with a large  
dark brown patch. <sup>irregular</sup> Body thick and  
robust, not tapering, densely shagreened from  
the short segmented hairs of the coat. Nasal  
tubercles present, well developed as before. Color  
dark velvety brown, reduced to a series of  
longitudinal transverse lines by the large  
narrowed & slightly oblique pale spaces  
which surround spots ①-③, ①-③ on thorax but  
then ②-④ are joined, next thoracic brown, fol-  
lowing dark center to the pale patches but not  
so dark as the ground. Hair on lower side of  
③ longer, concealing ov region. Head pale.  
Shed 1.1 mm sheds by splitting, like all seen  
look like a code clearly but enclosed in dried  
spindle brown coat on 5 up. As circular  
pale oval area around spiracle 6 & 11.  
Spun Sept 13 Thin irregular white cocoon  
like *Nucissaria* but larger, the body of it  
brownish & with a pinkish and opaque white  
spun white fibers with outside 13 x 6 mm  
Spun between the leaves in bottom of jar.

luminous with trace of brown dotting,  
leaf could dead leaf brown, a dull ground  
with reddish brown markings. Dark narrow  
d. line, indistinct, wavy sd and lat. line  
surface with dots and mottling. s-v region dotted  
with indist. defined line. Tubercles small, black  
setae very short, pale, slender tipped, i-vi and  
several for leg plates, normal, ix stly ped: vi  
and a few sd ends are sharp tipped. Feet normal,  
normal, 12 slightly enlarged, length  $6\frac{1}{2}$  mm  
with the dead leaves by a soft web.

July 21 Hds 60 fine brown reticulate. Smooth  
leaf mostly mottled with yellowish and  
dark brown patches as before but some  
mottled. Inj of the color of dead brown leaves.

Aug. 27 Hds 67 All leaf brown, yellow green  
finely reticulate with dark red brown  
uniformly, mostly the red mark a faint  
brown dorsal line. Tubercles small, black  
setae inconspicuous, vi & vii white, coarser.

Aug 28 Hds 10 (84 hds 14) new hds 2.1

Amoeba hds 1.1 (84 hds 14) Like stage 1.8

Calc. 57 4.82 1.17 1.67 2.38 3.41  $21\frac{2}{10}$

Calc. no. 15014

665

Oct Apr 20 1898

Like spores on white oak I. (Mushrooms) VI 21  
all whitest translucent, setae all white except  
2 on cth, orange, pointed, no subprimaries  
112 □. Feet green, tubercles large, white. No  
marks. Skin with fine sparse granules  $\frac{1}{2}$  i  
obj. Hd. 3 annid whitish slightly testaceous.

June 28 white, sharp lobed 4 mm. Body  
colored, feet green, tubercles white, high, with  
central seta and crown of about 4 shorter  
but equally thick ones. ix & v single, not  
high, vi of two small setae, not high, J style

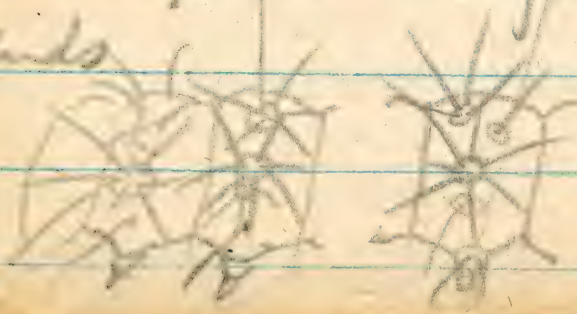
June 28 Hd. 7 whitish, body faintly greenish, head  
slender, long smooth <sup>conic</sup> columns with central seta  
and small <sup>conic</sup> crown, all white i-iii, iv small, v  
single hairs, vi with several long hairs. No v seen  
except front 5-v on 12-13 (cf 665)

July 3 Hd 1.8 whitish (i, ii tubercles chis. yellow, low 27  
below). Body greenish, tubercles yellow low round dot  
dorsal 1-ii. Hair white, single with short bristles  
brown. July 7 Hd 2.5 pale whitish granular, a small  
brown reticular streak on each side above. Tubercles  
large, 4 branched with tiny crown yellow with d, sd  
1 dot. Mass of yellow spots. Body reddish, faint red-  
dish tinted. Shed July 12, Hd 3.4 setae single  
July 15 A g.v. shed all dark brown to J, tubercles  
white, contrasting.

666 = 119

Eggs on *Quercus* *myrtifera*, hemispherical with flat base with distinct vertical ridges, dimpling above and ending by becoming flattened to surface of egg near micropyle. Number 28 ± Reticulation distinct, rather squared, a line at vertex of each rib and one in each groove not slightly wavy, the cross ribs four-sided all equally distinct. Ret. smaller at micropyle. Pale whitish green, a black dot at vertex and narrow concentric ring to dors. irregular or broken. D. 9 h 45 um.

Hatched June 23 Fastened the larvae together with a few silken cords. Flattened, thin legs spread out; hd rounded, whitish 5 um Red whitish green from foot, etc. updist and a series of red sd patches 3-7 distinct, lateral about behind 7. Hair long/white, esp long at the ends.



Many haired warts present, hair black & white spinules

Sox 2 more eggs also on *Q. tinctoria*, same but all pale whitish green. Note the ring and dot appears at first narrow red.

the long one absent internal. iv absent and vi absent. Skin spinulose esp d.

Shed June 26 Hd 9, all pale whitish. Body whitish, feet dark, against which a whitish sd line is defined. Five dark red sd spots as before. Warts pale, large & rounded esp sd on 2 whitish in *Geometra*-like, tall wavy haired. vi present. wiv? Hair black & white. Late spot fainter than a *tinctoria* gone

Shed July 5 Hd 1.4 Red spots gone, head with black markings = 119 (put out) Red spots indicated in 5 & 6.

Range June 23 - July 2  
50% out.

667 = 252

*Peckardia elegans* (elegans) ♀ out June 23  
1897. Mated night 23-24, eggs 24-25.

Elliptical flat 1.0 x .6 x .1 mm colorless  
whitish translucent. Retraculation distinct  
irregular quadrangular, narrow, raised.  
In the bright light (1/2 inch obj) with green  
leaf behind they appear as narrow black  
lines instead of a bright area on both sides,  
the flat cell areas dusky, grayish.

Hatched night July 5-6 just like *P. geminata*  
Series on 3, 2-2-1 4 1-1-1, 5-12 1-1, 13 2 all  
short, irregular knobbed tipped. Branches  
very short, just distinguishable as little  
protrusions. Elliptical rounded, dorsum  
and sides curved, 5-8 sp. smooth. Ridge  
smooth, setae colorless. Body shiny, skin  
smooth, colorless transparent. Feet green  
head concolorous.

Shell dull blue, not shiny, pale whitish  
first tinted with green, translucent. Ela

667A ♀ out June 27. Mated 27-28 with ♂ of same  
day [2 ♀ of two days would not mate, but hatched]  
210 night 28-29. Hatched July 9 (night 8-9 of a few)

667 Sample			667A	
	L	R		
July 6	.9	cut		
" 7	1.0	"	L	R
" 8	1.3	"	.8	hatched
" 9	1.4	white	1.0	cut
" 11	1.5	hile	1.3	"
" 12	1.7	cut	1.3	hatched
" 13	2.1	"	"	"
" 14	2.0	cut	"	"
" 15	"	with	1.2	cut
" 16	"	"	1.7	"
" 17	2.1	cut	1.9	"
" 18	1.4	white	2.1	"
" 19	"	"	2.0	cut
" 20	"	"	1.8	cut
" 21	"	"	2.3	cut
" 22	"	"	2.1	"
" 23	"	"	2.6	"
" 24	"	"	2.8	cut
" 25	"	"	"	"
" 26	"	"	2.9	cut
" 27	"	"	3.2	"
" 28	"	"	3.7	"
" 29	"	"	4.8	"
" 30	"	"	3.5	cut
" 31	"	"	"	"
Aug 1	"	"	4.0	cut
" 2	"	"	"	"
" 3	"	"	4.4	"
" 4	"	"	4.9	"
" 5	"	"	5.0	cut
" 6	"	"	"	"
" 7	"	"	5.4	cut
" 8	"	"	5.3	"
" 9	"	"	6.0	"
" 10	"	"	6.5	"
" 11	"	"	7.1	cut
" 12	"	"	"	"
" 13	"	"	"	"
" 14	"	"	7.3	cut
" 15	"	"	"	"
" 16	"	"	8.0	"
" 17	"	"	8.0	"

gate elliptical, narrow, the head  
narrow, quadrangular ridge  
slight, somewhat under, the  
setae 2 on 9, 1 on 10, 1 on the  
middle row of 4, black tipped and  
with short expanded base. Setae  
granular, small, sparse, low conical.  
Clean white everywhere, not  
produced on the ridge. The longest  
depressed space (1) and (2) are in-  
dented as slight hollows.

July 17 *Eleonora* elliptical  
narrowly quadrangular, head rounded  
not produced. All pointed  
whitish scarcely tinted with  
green. Setae distinct, sharp.  
Black tipped arising from  
slight tubercle on set ridge

distinct conic sep. on lat ridge all  
 of skin surface and tubercles covered densely  
 with small low conic clear granules, all  
 uniformly <sup>over</sup> over the obsolete deep spaces  
 when they are absent. Tubercles very  
 numerous, almost contiguous, but small, not  
 apparent. They give the frosted appearance  
 of space found, not necessarily round, lat. moderate  
 by colorless, translucent, blood less scanty,  
 green and no pigment, unusually narrow  
 [Cut] Aug 14 out of the bag, 3.2, 3.5 - cut  
 narrow, elongate, truncate before, tail  
 produced but tubercula like the  
 ridges. Frosted whitish from the granules,  
 and is slightly opaque, almost entirely  
 without pigment, few visible particularly,  
 slight green tinted from blood; an obscure  
 whitish dot under the 1st ridge at each  
<sup>inter-space</sup> inter-space representing 1st line. Setae short,  
 black distinct. Granules small, even  
 dense, conic, but not quite contiguous.

running uniformly over whole surface;  
 deep spaces scarce even in distinct irregular  
 lines just as above.

21st Aug Found granular greenish, flexible.  
 A very white @ line, no pigment. Tail  
 produced, notched at end. Setae about dark

22nd Aug Nice way of line looking clear  
 pigmented d. space. Upper 1/2 of side  
 pigmented, (4) dark. Setae small  
 Tail produced, notched at end

23rd Aug Last stage. Smooth, but  
 ridge narrow. Patches of pigment  
 in d. space; upper 1/2 side pigmented  
 as before. Faint reddish on tail.

Aug 19	10.5	eat
" 20	10.8	"
" 21	11.3	pin

Aug 21 Found several green  
 & spin.



Range June 25-29

53 % out

668 = 239

*Urodes bipunctata* out June 25, with ♂ right 25-26 but ♀ ran off. Nothing 26-27. Eggs 27-28 Elliptical, opaque whitish, 1.2 x .7 mm, white a glass and leaf, not very smooth obscure, very subequally quadrangular. Hatched night July 5-6. Distinctly segmented, opaque, whitish, spine whitish. Rounded & narrowed behind, truncate before, longest in front. S. lat spine moderate, flat, not hollowed, ridge slight. No marks except a large black spot on the head which consists of a large patch of pigment below the spiracle of joint 2 and shows over to vertex eye. Head smooth especially a vertex, the outline of a black mouth brown, pale around it. Setae long, with enlarged bases. ① 4-12 with distinct side prong,  $\frac{1}{3}$  length of other limb. Tip enlarged and cleft, basal  $\frac{2}{3}$  of seta milky white, apex transparent, smooth. On 3 2-2-1 on 4 1-2-1, ② of 5 leaves up 5, 7, 9 and 11 of

(Hatched 7-8 days)

668 A ♀ up in woods night 26-27 ♂ found in cage but away from ♀. Flew out 27-28 Egg night 28-29. Poor. Hatched July 5-6.

668 B ♀ in cage with ♂ night 26-27. ♂ ran off. Flew night 27-28, 28-29, 29-30 (taken)

668 C 2♀ in cage in woods out June 28. Two ♂ night 28-29 entered cage, in AM sitting apart from ♀. Eggs by both night 29-30. Hatched July 6-7, (both sets)

① Clean out. 13 has 2 sd setae simple and for ② a very long straight fine hair white and three times as long as the other. Skin smooth, slightly shiny.

668 Sample			668 C	
date	L	R	L	R
July 6	0	hatched		
" 7	1.1	cut	.9	hatched
" 8	1.3	"	1.1	cut
" 9	1.5	atid	1.4	"
" 10	"	hatched	1.4	"
" 11	1.8	cut	(out)	
" 12	2.1	"		
" 13	2.4	"		
" 14	"	hatched		
" 15	"	"		
" 16	2.6	cut		
" 17	2.6	walk		
" 18	3.2	cut		
" 19	3.4	"		
" 20	3.6	hatched		
" 21	"	"		

Late very shiny, tubercle ① hollowed above paired hollow. Seg. A white line below the skin under ① and ②, distinct. Spine smaller in proportion, not conspicuously whitish, rather clean, arranged just as in 17-18.

Shed July 10-11. Pale whitish green, a brownish patch shell on 2nd pair. Body with a white line along each ridge. Setae distinct, black. Skin granules sparse, coarse, becoming more so on the ridges.

Depressed spaces broadly indicated. Shed July 16 a very distinct yellow sd line from end to end. Green d from prod and 11 as round prob dot with green center, recalling fasciola. Very springy setae, the primary setae dark. Side pale watery, dorsal green. Dorsum granular, D ridge with few 2<sup>d</sup> setae. Tail squarish, springy.

Date	W	R	Notes
July 22	3.7	cut	Shed July 22 Eating whole leaf
" 23	4.3	"	Green, filling in with white
" 24	5.1	"	fragment d. up a sup. 1/2 lat.
" 25	5.5	hatched	but leaving a clear dark
" 26	"	"	
" 27	"	"	
" 28	"	"	
" 29	6.0	cut	
" 30	6.1	"	
" 31	7.2	"	line to the free yellow sd
Aug 1	7.6	"	line, which is broad, distinct
" 2	8.4	"	
" 3	8.0	hatched	
" 4	"	"	Granules dense, not quite ca-
" 5	"	"	
" 6	9.0	cut	
" 7	9.1	"	typical, curie, some 2 <sup>d</sup> spines
" 8	10.0	"	

on C more on D ridge. (1) (4) as white dot (1) with green center.

Shed July 29 granular, appressed on ridges, setae long. white green, broad yellow sd line edged dark above, nearly meeting at ends.

Tail notched at end by toothlike, Def. spaces as white spots. Eating whole leaf.

Shed Aug 1 - no setae. Whitest fringed. Sd line white, distinct. Aug 12 getting high

Aug 9	10.2	cut
" 10	10.8	"
" 11	"	"
" 12	11.2	"
" 13	10.6	"

and thick.

Spun Aug 13

669 = 558 C

Little code I on chestnut Brown Park, Wyo.  
July 2 1897. Eggshell, elliptical, flat as usual  
1.1 x .7 skin colorless white (can see net.)  
Stage I a Y-back, differs from T. pallida in Y's  
being smaller and all in line or nearly

so, not strongly alternating.

Y's X's  
X's Y's  
all colorless, skin smooth,  
depressed a little paired of seg. Setae pale,  
head colorless, eye black, retracted. 2 near all  
retracted. On joint 4 are five setae. Tips not

distructly swollen, and limbs of Y's  
a little shorter than joint limbs.

July 5 narrowly elliptical, tail  
rounded quadrate; dorsum  
flat a head, ridge sharply  
angled, smooth, regular, all the  
depressed spaces large and very  
distinct. Setae concave, lat ridge  
smooth, s.p. are retracted.

D	L	R
July 3	1.4	walk
" 4	1.3	to skin
" 5	1.4	to skin
" 6	1.5	cut
" 7	1.7	"
" 8	1.8	"
" 9	1.8	to shield
" 10	1.9	shell
" 11	1.9	cut
" 12	2.2	"
" 13	2.3	"
" 14	2.4	to shield
" 15	-	-
" 16	2.6	cut
" 17	2.9	"
" 18	3.2	"
" 19	3.2	shell
		dead

Covered with smooth, dense, fringed appressed  
granules, uniform, not papillate anywhere  
even on lat ridge. Setae absent. All colorless  
opaque whitish. Depressed spaces (1) - (6) present  
faintly on lat ridge. (and appressed ~~lines~~)  
Late distinctly pale green.

Stage II rounded, broadly elliptical, sides con-  
cave on the dorsal side, as a broadly  
broad area, gently arched 3-13. Tail slightly notched  
at tip, rounded. Dep. spaces very distinct, @ @ very large.  
@ narrow, elongate, deep sharp edged. Retracted  
ridges beaded but the clear appressed granules,  
in the narrowest part of / granules wide usually  
more. Bottom of dep. spaces finely granular dotted  
@ with shallow crater-like center. Color all  
pale green, slightly fringed by the granules.  
Granules uniform low, nowhere papillate.

Stage III a faint yellowish bar on @ @ (not present)  
Stage IV a distinct sep. dotted yellow line along @ @  
5-9 like 671 C III. @ @ is reddish spot on ridge.  
just a hint and hardly visible.

Stage V like 671 C II yellowish line 4-10. no red.  
July 16 a rounded pale red patch below in surrounding  
the depressed spots 7-8 and reaching to them before belt  
July 17 red dot encircling @ line (sent in alcohol)

Hd 4 mm seen, dorsal white, a white streak  
chocolate brown (inclined by pale yellow  
3-13. Dark brown dots 8, 9 at 1

670 = 559

Abatela in chestnut = luteopila at

Fort Lee July 2/1897. Only three seen there  
Hd 1.2 described (see 559)

Hd. 6 all greenish, a faint brown patch  
d. on 5, 8, 9, and 12. i with 2 setae, the

one simple and shorter of about greenish  
tipped hairs black on dark segs. male

on the rest. vi with several smooth hairs.

III <sup>warts conic, rudinate, concolorous.</sup>  
lobes, 5 lobes, 5 lobes, white, a brown

shade below apex each, shiny. Body green from

head, otherwise very colorless, a white sd line

encircling each seg most distinct 7-10 when it

indicates a faint brown patch on 9. Slight tint of

green also on 5 and 12. Hair long dark sparse  
with many slender short fine tipped pale ones sparsely

scattered on plain as 2<sup>nd</sup> and 3<sup>rd</sup> of fundatrix and a dark rudinate.

egg shell, 5 spheres, ribs 2 & 8 descending and

confluent, smooth & many hair on apex and

in hollows round to irregular ring. Venter -

single firm, reticulate. Hatched July 6 - white

blackest part green, purple at patch 5, 8, 9  
faint on 12, a clear black dot white. Hd. 3

setae simple, shiny, smooth, iii black, iv-v white  
still July 8 Hd 4.5 (pale white) Body mainly color  
a dark brown streak on apex

less green & from first, a purplish brown patch  
v-ii 5, 8, 9, 12 and trace of white sd line

in darker on (v-ii) on the pale segments.

Dorsal hair blackish but pale. Venter with

long setae (2 from i) and cluster of short & white

slight bulbous tips, concolorous with marks.

Later white sd line more distinct, developed

in venter of the small dorsal band.

Molt July 14 Hd 1.4 (the hd. 8) = 559

Calc. 33 .45 .76 1.16 1.75 2.66 4. rat  $\frac{66}{100}$

Found. 3 .45 .8 1.2 2 ± 3 ± 4.2 (NB 559)

T. testacea

671

Codes on chestnut, Post Jefferson 21 July 8, 1897

671 A In stage I a regular Y-back later red

D	L	R	Notes
Jul 8	1.3	cat	cross, the Y's large and strongly alternating. Colours, limbs equal.
" 9	1.3	"	
" 10	1.4	"	
" 11	"	to shed	
" 12	1.6	cat	Egg shell white 1 x .6 mm.
" 13	2.0	"	
" 14	2.2	"	Shed July 12 Red + with distinct black setae and subpapillae granules. (2)
" 15	"	"	
" 16	"	to shed	
" 17	"	"	
" 18	2.6	cat	Colours, transverse. End deep space
" 19	3.2	"	Shed July 17 Colours, greenish, no setae
" 20	3.4	"	similar on last ridge but papillae
" 21	3.6	still	tail notched quadrata, end deep 1/4
" 22	3.4	to shed	
" 23	"	"	
" 24	3.9	cat	girth large faint red patch 6-8 and reaching edge of both ridges, a trace of yellow on the ridge before behind it
" 25	4.5	"	Circle around (1) 7-8 pale whitish.
" 26	4.8	"	Later green & all white & yellow, red & black red before whitish (1) 7-8.
" 27	5.0	to shed	
" 28	"	"	
" 29	"	"	
" 30	"	"	
" 31	5.2	still	
Aug 1	5.3	cat	Shed July 22 ridge 2 granules wide, subpapillae, black on last ridge, clear yellow line 4-11, spot large 5-10, to (5) a side by it yellow line very pale salmon with 1 whitish circle on (1) 7-8. Cat white hair.
" 2	6.0	"	
" 3	6.1	"	
" 4	6.5	"	
" 5	6.7	"	
" 6	6.6	to shed	
" 7	6.4	still	
" 8	7.2	cat	Shed July 31 normal but very pale color spot to (6) not to head or tail. Red dot on head.
" 9	8.5	"	Shed Aug 1 spot on head gone. Great monkey (1) Aug 1 evidence, mature
" 10	9.5	"	
" 11	"	"	
" 12	"	"	
" 13	"	"	

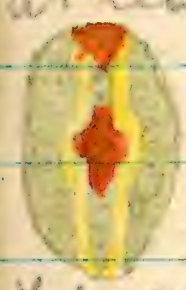
671 B = 558 C = 669

D	L	R	Notes
July 8	1.4	cat	Like 671 C, but more narrowly elongate, not filled out. All immi form pale green, no lines. Setae absolutely rudimentary, just distinguishable as little black stubs. Tail rounded quadrata, scarcely notched. Depressed space distinct, the ridges are granule wide. Mature structures well advanced.
" 10	1.6	cat	
" 11	1.8	"	
" 12	1.8	to shed	
" 13	1.9	to shed	
" 14	2.1	cat	
" 15	2.2	"	
" 16	2.3	to shed	
" 17	2.5	cat	
" 18	2.4	to shed	
" 19	"	"	
" 20	2.6	cat	
" 21	2.9	"	
" 22	3.1	to shed	
" 23	3.3	cat	
" 24	3.4	"	
" 25	3.2	to shed	
" 26	"	"	
" 27	3.6	still	
" 28	3.8	cat	
" 29	4.0	"	
" 30	4.4	"	
" 31	4.8	"	
Aug 1	4.5	to shed	Later yellow line on ridge (1). An
" 2	"	"	
" 3	5.0	to shed	Other III Brookhaven July 15; one with small round red spot, other just dark red spot all around (1) 7-8 and encircling a yellow line of 1st ridge I July 16 on good red dot central on 8, not seen.
" 4	5.3	cat	
" 5	5.5	"	
" 6	5.2	"	
" 7	6.7	to shed	
" 8	6.5	to shed	
" 9	"	"	
" 10	7.0	still	
Aug 1	7.4	cat	Shed July 20 shed spot 6-9 and on the ridge like red + faint, but good yellow all lines beyond it. Granules absent. Last large red spot encircling on 11. Patch (1)
" 2	7.8	cat	Shed July 27 shed spot 6-9 and on the ridge at 8 yellow edge except to lower edge (1). Shed Aug 1. Shed Aug 11

671 C = 5580 = 669

D	L	R	Notes
July 8	2.3	distal	Elliptical rounded, tail a little notched
" 9	2.4	"	in at the sides; dorsal part side
" 10	2.5	width	oblique, S-V reticulated the last and S-V
" 11	2.6	cut	ridge cartilaginous: sd ridge change in
" 12	2.9	"	ditcher only; even anchored and post.
" 13	3.2	"	Light green, a yellow line on each sd
" 14	3.2	width	ridge 5-9 connected obscurely by a
" 15	"	"	ridge centrally. Depressed spaces all
" 16	3.4	cut	present, large. distinct about edge
" 17	3.7	"	the lathrid ridges smooth appeared
" 18	4.0	still	clear granular. ridges are parallel on the
" 19	4.3	cut	narrow parts. granules very smooth,
" 20	4.2	width	not papillose except a little on the
" 21	"	"	tail. Setae all absent, scarcely trace.
" 22	"	"	SD ridge 12 rather narrowly elliptical, tail
" 23	4.8	cut	rounded & pedicel. Dorsal ridge granular,
" 24	5.3	"	granular, sd ridge prominent. Last ridge
" 25	5.8	"	extending beyond S-V. Depressed spaces
" 26	5.8	width	very distinct, large & sharp, the lathrid
" 27	2.7	cut	ridges scarcely more than are granular.
" 28	8.0	"	Last ridge sloped (11111). All very smooth
" 29	8.4	"	granular. Light green, a yellow line on
" 30	8.8	"	sd ridge 5-9 sloped connected across
" 31	2.8	"	in 10's between the spaces (11). Yellow line
" 32	3.1	"	on 5-10, somewhat connected across dorsal
" 33	3.4	"	centrally, a reddish tinted bridge on 8.
" 34	3.7	"	(Like plate to fig 3 of <i>T. pallida</i> 1911)
" 35	4.0	"	Later patch larger, forming a red square
" 36	4.3	"	space 7-8 longer than width, yellow, yellow
" 37	4.6	"	line not quite reaching distal extremity
" 38	4.9	"	with a red line between 1-2, 3-4, 5-6, 7-8
" 39	5.2	"	and narrow bridge 7-8, 1-2, 3-4
" 40	5.5	"	SD ridge 12 yellow line 3-12, broad
" 41	5.8	"	centrally & covering top of 5/1 on 6-9. The
" 42	6.1	"	yellow bridge covers 5-9 in 10's space, the
" 43	6.4	"	reddish patch 7-8 in column central

and dark brown on the lathrid ridges. Others green  
 Def. spaces large, rounded, sharp, green. Space on  
 spot that rounded, several not shed off, dorsal not  
 broad, side oblique, concave. Lathrid ridges several  
 granular side, somewhat even granular, a little just  
 space first sloped, a circular shallow Sarcocolla  
 center, in center, all very smooth. Yellow sd. line  
 does not reach 3 and on 13 just. July 18 red  
 mark became (1)67 - (1)9 x width (1) - middle (1) and a  
 faint red mark d on 3 between the lines. Yellow  
 spot in upper part of def. space (2).  
 Still July 22 eating whole leaf. Green yellow dot  
 on lower half of (4) and center of (6). Brown red  
 patch on 6-9 in clear leaf form, skin below  
 is more like leaf clubs and red marks on 3  
 sd line 3-tail, width of base just reaching center  
 of (4). Lathrid ridges about 2 granular width at the  
 narrowest; space first granular except in the area  
 like center which are without the large ones.  
 Setae fine, about 2 curved on a side.  
 Still July 30 Same, granular small & fine, ridge  
 at least 3 granular wide red spot underlying in  
 center is found to outer edge of middle sd  
 line. (4) with double yellow spot, (5) single  
 spot in center. Red granules, varicose  
 edges, brown on ridges, fleshy in def. space  
 Later complete band 3-tail, side just reaching  
 upper side of def. space (1) 7-8 widened and edge 3  
 spin any without lacy color, inf a wide siliceous  
 surface of the green.  
 Evens Sclerites. elliptical, in a curled end  
 of leaf tied up with numerous cross bands  
 of white silk; no soil. Color brown, a little  
 whitish, not extra dark. 7x5 ves. Side often flat




Apatela.

672

Egg at Put Jefferson L.I. July 8 1897: Like

670 g.v. Hatched Like 670 Hds. 45-

pal with 2 faint black spots in front of each  
lobe. Red, colorless, food greenish, purple d. patches  
4-5, 8-9, 12, the other segs whitish. Setae  
single smooth, black d. skin smooth.

Shed Hds. 6 whitish, 3 black spots on each lobe,  
leg green from food, darker white d. on 5 d. line  
about cutting the purple brown patches 4-5, 8-9, 12  
2 also brown marked, 2, 6, 7, 10 whitish ann  
10 ii. Single stiff dark setae, 2 from i, on  
corn of glandular tipped cercus. Hair  
from the two conic warts. S-V hair pale.  
one above, 2 below each side 

Shed July 14 Hds. 9 whitish, 4 brown black patches  
the upper, outer small. Body greenish from  
food, all as before, some 2<sup>d</sup> hair from skin.

Shed July 17 Hds. 1.4 Like 655 II g.v.

= lobatae (put out)

Calc: .36 .59 .99 1.65 2.75 4.58 7.6  $\frac{6}{10}$

673

Apatela in maple, Deepcut July 14 1897

Hd. rounded bilobed mouth produced, tip of  
jaws brown, w. 45 m. Body colorless, green  
from feet, setae single from low concolorous  
tubercle, i 5-14 black the rest whitish

Long slender spinulose. Hd setae alone  
and one of each also black. Tubercle whitish.

Skin shining finely granulate, one weak  
setae apparently i-v, but they have no space

July 16 Hd .6 bilobed, white. Body green from  
feet, no marked hairs fine, long white a  
few black ones of arising in brown from  
small concolorous wart, normal. 12 black setae

July 20 Hd 1 mm white a large black patch  
over lower  $\frac{1}{2}$  of each lobe, irregular above &  
a small patch over s. Body green from feet,  
no marked, hair long abundant from low  
small wart, white a few black one d.  
esp. in struggling tube 5, 7 & 12. Presently  
a few 2<sup>d</sup> hair wandering from the wart.

line

Late traces of ~~symptoms~~ <sup>(9/14/65)</sup> of a single red black &  
shaded <sup>6</sup> Hd .8 bilobed, all black, labrum  
and setae white. Body greenish white, double  
d. & lateral black line more distinct. Hair  
long dense all white except long pencil  
i, 5, 7, 12, <sup>among from black spots</sup> then 5 & 7 double & disjunct.  
Warts white, obscure s-v. Much shorter hair  
the feet, abd leg plate & feet part 1/3 black  
Late hair ~~specimens~~ except at tips.  
July 27 Hd .8 black. Body greenish white  
granular of high lat & stay black hair,  
and black standing s-v & ~~black~~ legs  
black & whole of 13 d. & spot 5, 7, 12 d.  
Hair long very abundant, mostly 2<sup>d</sup>, with  
obscure yellowish white, present long black  
double 5, 7, high 12. all as in reaction.

(=Americana. Put out as I have had two  
stages from Peter's (more specimens))



Hemiptera?

674

Apatelid? egg on black oak, Brookhaven L.I.  
July, 15, 1897. Circular, flattened; a broad  
very thin rim, finely, radially, striate 2 mm  
another rising area 18 ribbed, sharply marked  
at its upper edge by a gipping cross rib; 2  
top 6 mm, low rising to micropyle, crossed  
9 ribbed, the rib starting from the cross  
line and alternating with the lower ones.

D. 1.4, height 3 mm. Pale whitish green the  
shell like rim whitish. Under the  $\frac{1}{2}$  inch  
oil, the whole egg is broadly faintly re-  
ticulated in all the hollow between  
the curious ribs, but not so as to affect  
any of the angles. Micropyle a low rounded  
prominence, faintly reticular. Ridge  
very marked but slowly sloping.

Another on black oak Bellport hatched July  
22. A very long slender rapidly tapering  
wristed, length 5 mm, width .4 mm.  
Had whitish pale brown a darker line on each

side, as wide as body, 4 mm. 5th long, pale  
brown. Abd. feet rudimentary 7-8, distinct 9, 10  
13. Body fine, 6+ annulate, faintly greenish,  
shiny, a broad red brown lateral stripe 3-  
divanish anal feet. Tubercles very large,  
black, distinct, i-v with single long dusky  
setae curving forward, fine, and very distinct  
feet all very faintly reddish. (died)

Aug 28

6745 = 117

<sup>IV</sup>  
 Apantele or Agalca usasa Middle Island, L. D.  
 July 16, 1897. Hd 1.2. Ocelli, apical tubercle  
 prominent, greenish tubercle, a brown line up  
 from eye to apical tubercle then down a to  
 front & back way. Body compressed, i pro  
 dorsum and ii-ii 12 esp ii; yellowish green,  
 green from pro driving: a faint brown  
 stained dot 2, 3, a distinct spot 4-5, 6  
 11 on 5, 1 divided & pal. d line; sd line 7-10  
 white on 7 and scattering behind, i-ii on  
 7 & 8, ii on 9, 10, just joining another spot  
 11-12 which widens and covers all of 12  
 i-iii, narrow, pedunc. 13 & anal plate  
 enclosed green patch 8-11. Hair few, sev-  
 eral from a wart (pal, all simple non-  
 glandular; a mass of white 2<sup>d</sup> on  
 5 & below the white tracheal line.

<sup>V</sup>  
 Aug 20 Hd 1.5 Same, the brown shade moved  
 down from tubercle i on the face and inward to  
 a patch of white, as well as all way down the

into side to eyes. Body green, as before. 6 & 10  
 and segment ventral very brown. A white dot  
 under to the back about a 7-10.

<sup>VI</sup>  
 Aug 21 Hd 2.4 Same. Body green, brown d, but  
 present on 2, white on ii-5, reddish about on 6,  
 begin with ii 7, branches running along ii only on  
 8-11, even together on 12 covering 13 i-ii and  
 narrow to anal plate. Hair small, green  
 central hair long, brown scattering, a few black  
 a few pale 2<sup>d</sup> s-v scattering from vi.

<sup>VII</sup>  
 Aug 20 Hd 3.5 greenish, a dark rim  
 brown band a pale 1 & 2 over both joined  
 above, part, no dark band, edges diffuse  
 Body clear green scattered as before in deep  
 red blackish-brown, ventral tubercle  
 reddish. Hair small, 1 long hair a several  
 short one black 1-ii, white 1 mixed 2<sup>d</sup>  
 s-v. 12 13 elevated sharply, and part of  
 body not compressed, apparently dislocated  
 by the green part 6. Head on 13 prominent  
 blackish black surrounded. J Aug 9



hamamelis (JBS)

676

Remarkable little *Apatela* or black oak  
Hd. 8 whitish, tubercle i, is large, a trace of a  
brown line above. Body yellowish-green,  
tubercle with 1 white seta curving forward  
and a crown of short spines. A band of 3 on  
each side of ii much produced\* traces as  
long as any other, like a group of tubercles  
①, 3, 4 and iii 5-13 large but no longer than  
wide, ii conspicuously small. All the other  
small, obscure. Body tubercles have a diffuse  
crown, not apical only as before; tubercle  
of ii single haired, iii & v badly distinguished  
vi several haired, low. No 2<sup>d</sup> hair seen

(\* 2 front and anteclypeus of the form regular. Csh cote)  
Another Hd 1.2 Same tub i with brown dot. Body  
tubercle as before, single haired except vi,  
the large ones i-iv with short spinose crown  
yellow with d. and rd yellow streaked  
dots. Hair white, curving forward, ii  
conspicuously weak. Body whitish,

676A One came out nearly unripe, chestnut  
with bright white spots around i, but not over ii  
broken white d. line, pale faint side line

green from food. J-style, eat whole leaf.  
July 23 Hd 1.7 Same, brown reticulation on lobes  
Body greenish, as before, crown of tubercles slight  
the csh ones still largest. Tubercles yellowish  
broken d. & rd line. ii weak, d. line clear  
at tip. Hair practically single except vi  
July 24, shaded with brown, surrounding  
with ii in irregular rings.

July 30 Hd 2.2 whitish, brown reticulation  
over face of lobes. Tarsus small, all  
single white haired, but still with spinose  
crown; vi with several soft hairs  
greenish yellow, with an irregular crown  
d. and rd line center of whitish. Tubercle yellow  
rd, lat. lines brown band, distinct on  
2-13. Tarsus i-ii yellowish, others small, crown  
faint whitish. Csh hair no 2<sup>d</sup> hair. [Very weak  
Another Hd 2.8 same, with low single haired]

July 5 Hd 3.0 as above, 2<sup>d</sup> hairs of csh present by  
res. Hair single, with low, no crown.  
July 6 Hd 3.6 Apparently exactly pattern of 673  
but color as different don't look at all like  
it. Color dull green leaf and. 2<sup>d</sup> band broader  
maculae & lines ferruginous, on 12 2<sup>d</sup> bright  
margin and d. line edged with brown. Broad  
band of white d. line a pair and not  
contrasting. Tarsus small, whitish. [Two thin  
lobes!] July 6 chocolate brown light white  
June May 1898 Cat no 15025-6

mass on beech at  
Roubidoux Lake  
Aug 13.

677 = 558A

Code on tree black oak Smithhaven, L.S. July

Date	Length	Width	Remarks
July 23	2.9	1.8	6812
" 24	"	"	"
" 25	4.5	"	mark
" 26	5.1	"	cut
" 27	4.8	"	cut
" 28	"	"	"
" 29	5.1	"	cut
" 30	5.2	"	cut
" 31	5.5	"	"
Aug 1	6.5	"	"
" 2	7.2	"	"
" 3	6.9	"	"
" 4	"	"	"
" 5	"	"	"

23, 1897; elliptical, most much  
disrupted, tent rounded quadrati  
distinctly notched on the sides. Surface

slightly, lateral spaces distinctly  
concave, 5-vary, small & retracted.

Ed. ridge prominent, beaded to  
vesicular segmentarily. Both ridges  
with about distinct black spots

(Skin generally large on the tubercles  
bearing a crown of minute black  
spines, being deep spaces large  
& distinct esp. (1) and (4), the small

ones (3) absent, (5) and (6) visible in  
good light, more very sharp edged

these & padding off as well as the  
lateral ridges on sides (and 2) of

with fine, 2 spines on each the  
lance is finely furrow nearly all over  
Lateral ridge also the distinct

677C at Smithhaven woods, Greenfield, Vermont  
furry, just visible as in 677F  
taken 5.3, 6.5 to 7.2 on tree 2, broken bridge  
on 7 curved.

seg. wavy, the single setae and the tubercle  
all colorless fringed white, opaque, rows

marks  
width 2  
seg 1.8

lateral 2.

no ridge

ridge a

vesicular

lateral 2.

the edge

distinct

by 2 the

edge of

lateral 2

rather

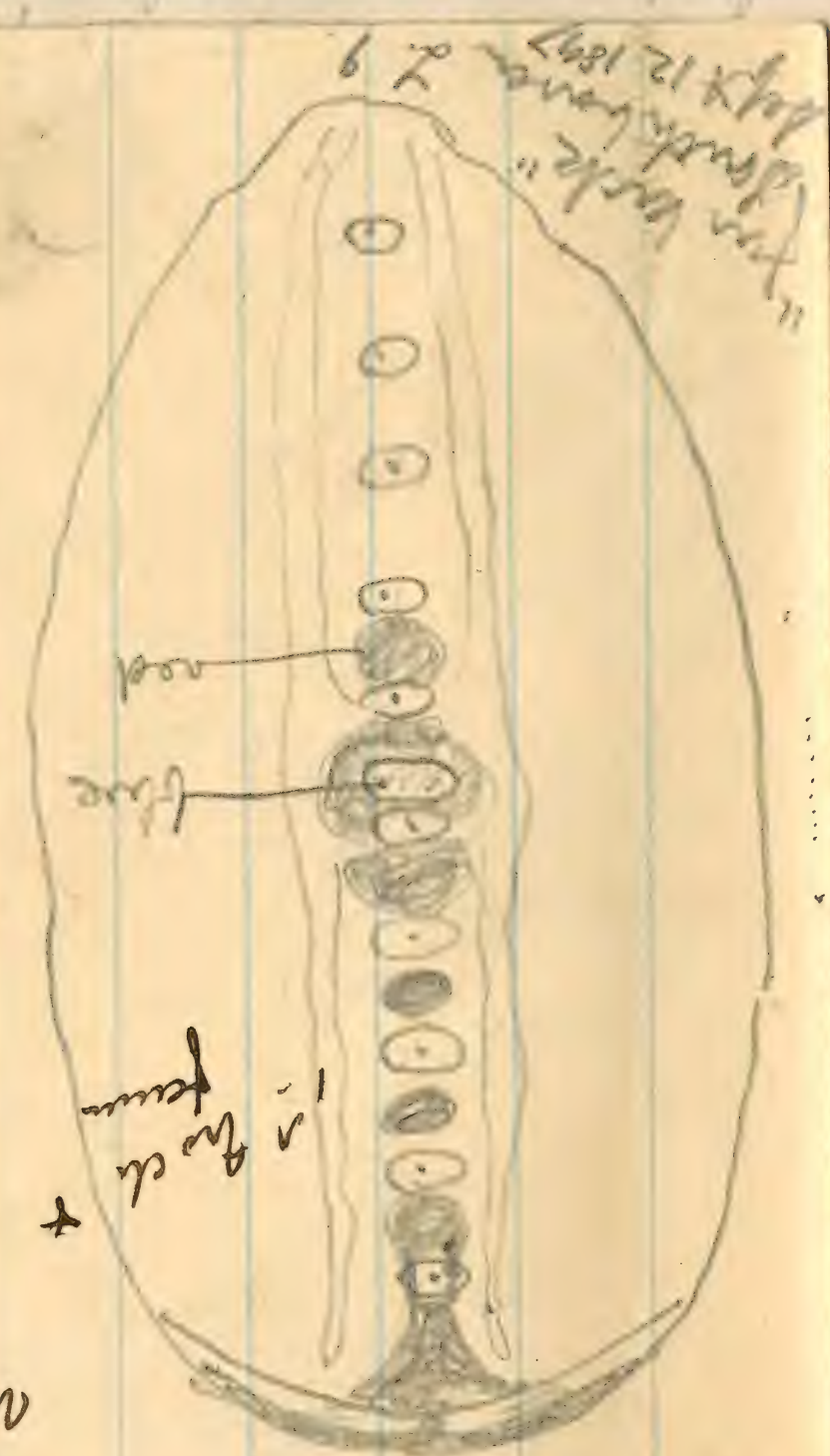
the base

on the

the red in the other two.] The dorsal with

spine give a shade along all the ridges

seen on the ends.



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large 7th.

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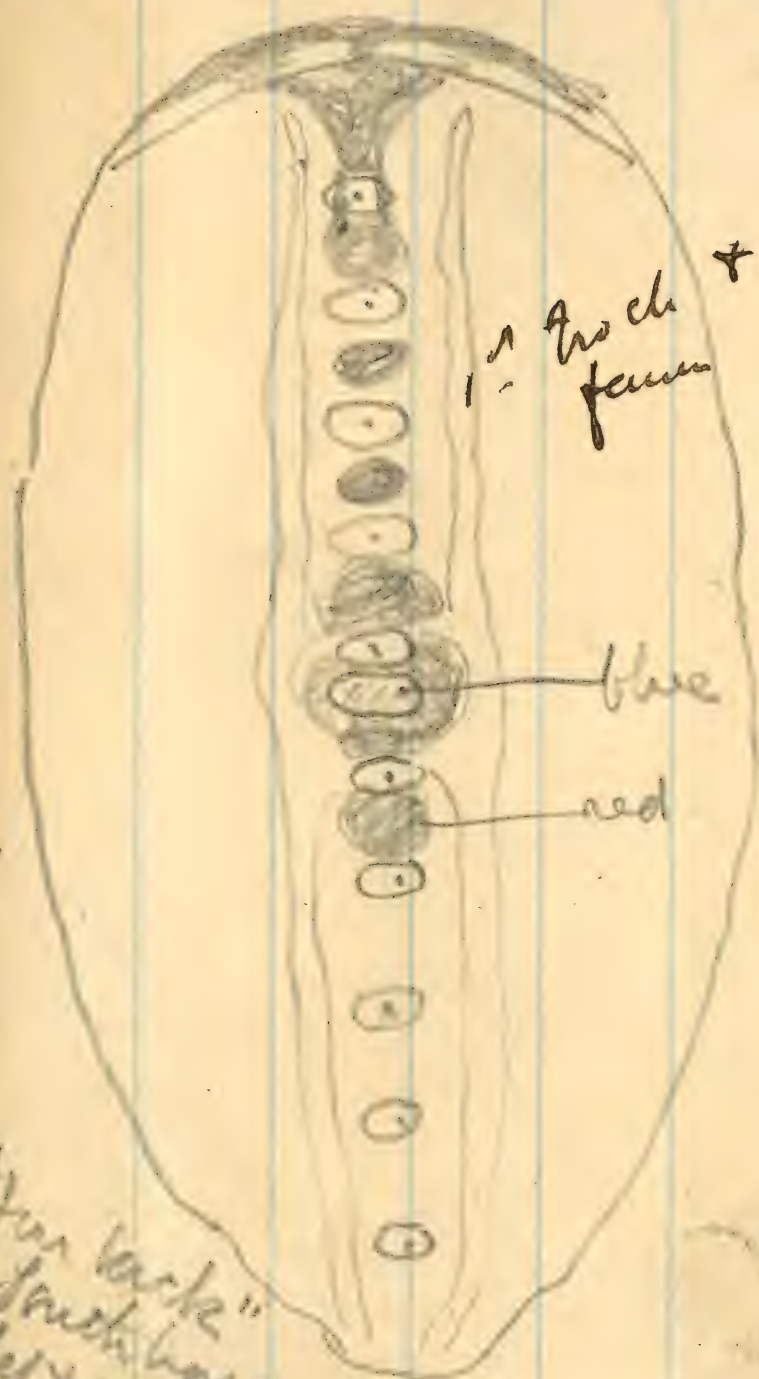
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Arch  
femur +

blue

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"fun back"  
Larchmont  
Sept 12 1897 L 9

Fig 3. *larva* (pupa) (pupa)

Fig 4. End of pupa, ventral view

Fig 5. End of pupa, dorsal view

Fig 6. End of pupa, lateral view

Fig 7. Sclerotization of pupa

Worm on beech at  
Runkbuckowa Lake  
Aug 13.

677 = 558A

Code on tree black oak Southaven, L.S. July

Date	Length	Color	Description
Aug 23	2.8	black	23, 1877; elliptical, roots much
" 24	2.7	"	disrupted, tent rounded quadrati
" 25	4.5	black	distinctly notched on the sides. bases
" 26	5.1	cut	slightly lateral space distinctly
" 27	4.8	black	concave, S-V very small & retracted.
" 28	"	"	
" 29	5.1	black	Sd ridge prominent, beaded in-
" 30	5.2	cut	vesicular segmentarily. Both ridge
" 31	5.5	"	with short distinct black 1 <sup>st</sup> setae
Aug 1	6.5	"	(Skin generally large on the tubercle
" 2	7.2	"	bearing a series of minute black
" 3	6.9	"	spines, (long) deep space large
" 4	"	"	& distinct esp (1) and (4), the small
" 5	"	"	ones (3) absent, (5) and (6) visible in

light, some very sharp edged  
These & fading off gradually on the  
lateral ridges on sides (and 2<sup>nd</sup>)  
into fine, 2<sup>nd</sup> space as that the  
lance in finely fuzzy nearly all over  
Lateral ridges also are distinct

Date	Length	Color	Description
Aug 1	4.5	cut	
" 2	4.6	"	
" 3	"	"	
Aug 1	5.2	"	
" 2	5.5	"	
" 3	5.3	black	

677C at Southaven woods. 7 larvae, similar  
furry, just visible as in 677E  
between 5.3, 6.5 to faint yellow line 3, broken ledge  
as in red.

seg. wavy, the single setae at the tubercle  
all colorless frosted white, opaque no  
marks. Lateral ridge broad, many spin  
wide the moderate space fine, granular in base  
size 1.8 x 1.1 mm. Apparently just in stage III.

Others 1.8, 2.1 eating all faintly black green,  
no marks. The fur gives the densely sd  
ridge a brown cast under lens. Trace of  
greenish white sd line just appearing.

Others 2.2, 2.4, 2.6 eating. Distinctly (black) green  
the edges & ridge clear, more colorless. An in-  
distinct dotted yellow D line 4-10 connected  
by a short bar in interspace 7<sup>(4E)</sup> 8, which is  
distinct yellow in interspace red. D ridge in tail

Others 2.8, 2.8, 2.8, 2.6 to shed. Same green the  
yellow sd line is a series of about 10 dots on  
the dorsum (i. interesting). The bar is wanting  
in two, though the dot 7<sup>(4E)</sup> 8 is enlarged, pinkish-  
red red in the other two. The brown with  
spine give a shade along all the ridge  
ending at the ends.

IV Ridge esp ① very slight tubercles narrow.

Other all sizes up to 3.8, 4.0 to head. Litter 558A yellow line below sd. ridge, seen curved in on cone light double & refracted. Red bridge, yellow edged granules small uniform on all latitudinal ridges, 4-wide, each with crown of minute radiate spines, brown in ② and ③ ant.

Sp. 4.0, 4.0, 4.2, 4.5 cat. Elliptical, head rounded, slightly notched at its ends, d. sp. about half as long as lat. flat. Lat steep above, slightly concave. S-r small, retracted. (ridge) ① (perman)

Dep. spaces fairly large, distinct; latitudinal ridges rounded, side of space not +. Skin looks smooth minutely granular even spinning a little; dep. spaces somewhat with large round centers. all light yellow green, rather translucent on edges yellow ① line 3 post - 12 and narrowed at addressal spaces, esp. slender not reaching ends, a yellow band along 5 ant, shaded & minute brown spines. Dep. sp. (4) yellow in hue with green center.

Sd. line green at ends, a yellow bridge 7-9 just meeting addressals of 7 and 9 containing a red spot on 7 post and 8; line not widened nor

enlarged on granules small, rounded, not quite continuous uniform all over, the narrower latitudinal ridges 4 granules wide. Each granule with central line and radial crown of 4-6 minute dusky spines becomg so as to give a shade on ant. edge I.

8-11 July 29 Absolutely smooth, fine clear granules, the granules low rounded smooth uniform at base of fur under microscope, close contact with not apparent, small, the ridges never less than 5 granules wide. Depressed spaces acute small but sharp, still some fine granules, 9, fine upper with fine granular center

Shed Aug 2 Small red bridge

for all uniform white

Shed July 26 Litter 677 III; July 28 trace sd line very narrow. July 29 blunt spines, narrow dotted sd line

677A After a same time. Elongate, elliptical

Date	L	R	Notes
July 23	1.1	cut	truncated before, tail broadly rounded
" 24	1.9	"	scarcely notched at the sides. Head
" 25	1.8	to head	and sides rounded, not distinct
" 26	1.9	stiff	concave, nearly flat sd ridge esp.
" 27	2.1	cut	tubercles with large lens round
" 28	2.2	"	tubercles bearing 2 short black setae
" 29	2.6	"	alternating, those on 5, 7, 9 a little
" 30	2.8	"	tapped out, looking further out
" 31	2.8	to head	than the other. Lateral ridge not
Aug 1	2.6	"	tubercular, gently waved with
" 2	3.3	cut	converged with
" 3	3.8	"	segmentarily. Both ridges broadly
" 4	4.3	"	nearly contiguous granules produced
" 5	4.2	to head	into very pale slender spines
" 6	"	"	like spines, dorsal and lateral spaces
" 7	"	"	centrally smooth, containing the indicated
" 8	5.0	cut	depressed spaces, all alike smooth and
" 9	5.4	"	slightly uneven, protected by the setae
" 10	5.6	"	ridges. Color is whitish faintly tinged
" 11	6.2	"	with green, dorsum darker from food. A few
" 12	5.9	to head	few white rounded granules at the 1st setae.
" 15	6.5	cut	
" 16	7.5	"	
" 17	8.2	"	
" 19	8.5	"	

into very pale slender spines like spines, dorsal and lateral spaces centrally smooth, containing the indicated depressed spaces, all alike smooth and slightly uneven, protected by the setae ridges. Color is whitish faintly tinged with green, dorsum darker from food. A few white rounded granules at the 1st setae.



(=669)

677B *Litho* Y-back on oak (*Q. coccinea*) taken with

Date Length R

July 24	1.2	cat
" 25	1.3	"
" 26	1.2	"
" 27	"	"
" 28	1.4	cat
" 29	"	"
" 30	1.7	"
" 31	1.9	"
Aug 1	1.7	walk
" 2	"	fly
" 3	2.0	cat
" 4	2.4	"
" 6	2.4	fly
" 7	"	"
" 8	2.5	slide
" 9	2.6	cat
" 11	3.2	"

preceding. Setae as in *T. pallida*.  
 3-2-2-1, 4 Y-2-1, 5-12 Y-1, 13 2. Y-spin  
 short shaft, limbs subequal; spin  
 slender, tapering, knotted-cleft  
 on tip, all pale. Elliptical, equant  
 truncate before, rounded behind,  
 highest in front. Spaces broad,  
 not sunken. Skin smooth &  
 shiny, double hollows at  $\odot$   
 all near coluber, tinged with  
 yellowish green. Y-s on aligments,  
 alternating, ant. limb little short.

After emptying there is a square yellow hole 8-10.

Shed July 27 practically no setae; def. spaces very long.

Lateral ridge / row large appressed granules = 669

Shed Aug 3 smooth colorless, late sd dots yellow

line on central eye.

Shed Aug 8 Red spot  $\odot$ . Two yellow sd lines

Regular ones. (not ant)

(677B) (2) rounded, highest 2 center, (4) elongate.  
 As in 558 B. Bright green, prominent d-space  
 bearing a narrow line above sd line, & in app  
 $\frac{1}{2}$  cent ap. - sd line narrow, 4-13, parallel a little  
 wavy; a broad yellow ridge 7-8 center, and  
 a square dark red spot produced a little  
 behind a reaching sd line on each side. A  
 distinct transverse yellow line on ant. edge, &  
 not joining the sd line. (4) yellow & green center.  
 Skin not at all shiny. Yellow line on 3 edged  
 in front with callosities broken. Purks feet, by  
 July 30 eating whole leaf. Aug 1 some holes on ant.  
 on a 3 crumpled. A faint crescent spot a 3, 4  
 Aug 4 a broken yellow line along lateral  
 ridge and white sd edge, obscure, but truly  
 joining the yellow collar on 3 and running  
 down 13. Aug 5 all nearly kind greenish  
 white to J, shiny.

678 = 558 A

A  
 Egg on black oak south branch July 23 1897 laid  
 on spinous a smaller vein. 1.0 x .6, very  
 small flat, shiny, slightly wrinkled and  
 iridescent. Pts. obscure lines, elongate  
 irregular quadrangular, not peculiar.

B another on same leaf as (A) B, 3 x .5 Same

Date	L	R	L	R	
	A	A	B	B	A Hatched July 26. B (waited to hatch)
26	.8	.8			hd pale, eyes 1/2 inch, with
27	.9	.9			brwn. c-sh. bands
28	.9	.9			2nd inst. Red a-sh
29	1.0	1.0			5th inst Ys all red
30	1.1	1.1			ant. limbs short, c-sh
31	1.2	1.2			next inst to c-sh
1	1.2	1.2			with a white spot on
2	1.2	1.2			hd. & thorax tips of
3	1.3	1.3			retreated a little
4	1.4	1.4			ant. limbs short. 2nd
5	1.4	1.4			another same. shell 3x5
6	2.0	2.0			+ 5.7 7.11.
7	2.2	2.2			shed large irregular
8	2.3	2.3			look for body = (A) A
9	2.3	2.3			
10	2.3	2.3			
11	2.5	2.5			
12	2.5	2.5			

Another I yellowish  
 Amp. Ys small 5, 7, 9, 11  
 Dors 5, 11, 45°, 7, 9, 90°  
 head 11 1/2 as long as head  
 rounded, other 4 weak  
 seg. white but with  
 brown tips. all white  
 legs whitish, c-sh  
 brown, retreating.  
 shed large irregular. 1st  
 black leaf on ridge.

Chalcididae. yellowish  
 Apr. 75 - 1898  
 Hatched June 28  
 5th inst. Sept 14

Blackbirds of the

June 15<sup>th</sup> 1898

Hatched June 28<sup>th</sup>

Some eating Sept 19<sup>th</sup>



678 = 558 A

A  
Egg on black oak south branch July 23 1897 laid  
up against a smaller vein. 1.0 x .6, very  
small, flat, shiny, slightly waxy and  
iridescent. Pts. obscure lines, elongate  
irregular quadrangle, not fecund.

B  
Another on same leaf as 677 B, 8 x 5. Same

Date	L	R	L	R	
	A	A	B	B	A Hatched July 26. B (Failed to hatch)
July 26	.85	cut			hd pale, eye black, mouth
" 27	.9	"			brown, c-sh hairy.
" 28	.9	"			△ brown. Red ash
" 29	1.0	"			669 but Y's alternate
" 30	1.1	"			and limb shorter, in
" 31	1.2	hairy			next up to c-sh
Aug 1	1.2	hairy			with a white spot on
" 2	1.2	shell			tip of horn top of
" 3	1.4	cut			normal spine.
" 4	1.7	"			shorter on back tips.
" 6	1.8	hairy			another same. shell 8x5
" 7	"	"			+ 5, 7, 9, 11.
" 8	2.0	cut			shed Aug 2 Regular
" 9	2.2	"			with fur back = 677 A
" 10	2.3	"			Another I Yaphank 21
" 11	2.6	shell			Aug. Y's small 5, 7, 9, 11
" 12	"	hairy			cut 5, 11, 45°, 7, 9, 90°!!
					limb 11 1/2 as long as first
					rounded, other of weak
					sep. shorter but with
					horn tip all white
					less whitish, c-sh
					brown, reticulated.
					shed Aug 2 regular. Two
					black tips on ridges.

7-1.2  
1.2-1.5  
1.8-2.5  
2.8-4.0  
4.0-5.7  
5.7-8.2

