the cymes of the maple-leaved arrow-wood (*Viburnum acerifolia*) just as they are going out of bloom. The fruit of this does not ripen till October, and some larva lives in the fleshy substance in which the thin, flat coriaceous seed is immersed, which is probably that of this *Apion*, though not yet so proven. This is one of the largest species of the genus, and when beaten into the umbrella behaves and looks so much like the worthless *Anthonomus quadrigibbus*, that till the past season it was always rejected.

DESCRIPTION OF THE PREPARATORY STAGES OF ARGYNNIS HESPERIS, Edw.

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

EGG.—Conoidal, round-topped, nearly as broad at base as high, the top depressed; marked by about 19 thin, elevated, vertical ribs, one half running from base to summit, the others but four fifths or more the distance; the spaces between crossed by many low horizontal ridges; the micropyle surrounded by two or three circles of very fine depressions, outside of which are rows of very large four or five-sided depressed cells; color yellow-green. Duration of this stage about ten days.

YOUNG LARVA.—Length .06 inch; cylindrical, thickest in middle; color yellow-green; marked as in the allied species by rows of flattened tuberculous brown spots, each of which gives one or two long, tapering hairs; on dorsum of 2 a dark oval patch with a row of hairs in front, turned forward, and a shorter row behind; head obovoid, black, with many long hairs. The larva hibernates directly from the egg.

After First Moul: Length .1 inch; color green, mottled with brown over dorsum; the under side pale green; the spines in number and position as at maturity, and as in the genus, small at base, tapering little, wholly black, beset with many short black bristles; head obovoid, black, with black hairs. Duration of this stage eight days, in April and May.

After Second Moul: Length .15 inch; color brown and gray; a double indistinct gray dorsal stripe, and a similar one between dorsal and upper lateral spines; the spines black; those of the middle row have the bases on outer side pale yellow, of the lower row the bases are wholly pale yellow; head as before. Duration of this stage eight days, in May.

After Third Moul: Length .28 inch ; color black and dark gray, the sides mottled ; the double dorsal stripe more definite than before ; the spines as before ; head same also. To next moult four days, in May.

After Fourth Moul: Length .44 inch ; color black and gray ; the dorsal stripe now solid, dark gray ; the spines black to bases except those of lower row, and on 3 and 4 of middle row, all which have yolk-yellow at base and half way up the stems ; all bristles black ; head brown-black over the front with many black hairs, long and short, the back brownish-yellow. To next moult eight days, in May.

After Fifth Moul: Length .7 inch ; in about eight days was fully grown.

MATURE LARVA.—Length 1.2 to 1.4 inch ; slender, somewhat thickened in middle, the segments well rounded ; color wholly velvet-black or brown-black (no gray dorsal stripe as before last moult) ; three rows of spines on either side, as in the genus, all of them yellow nearly to tip, the rest black ; feet black, pro-legs brown-yellow ; head sub-cordate, the vertices rounded, dull brown in front, dull yellow at back. From fifth moult to pupation 14 days.

CHRYsalis.—Length .9 inch ; breadth across mesonotum .26, across abdomen .23 inch ; like *Atlantis* in shape, but stouter ; color dark brown over head and wing cases ; so also on the front of each abdominal segment, in serrations, the rest yellow-brown. Duration of this stage ten days, in June.

HESPERIS flies in Colorado, Utah and Montana. Mr. Bruce writes me of its habits thus : "*Hesperis* is by far the most abundant species of the genus along the canons and water courses of the eastern or front range of the Rocky Mtns., in Colorado, at from 6,500 to 8,000 feet elevation. It is very active and restless, and difficult of capture except when on flowers. They are very partial to the bloom of Clematis, and I have frequently taken several at one sweep of the net on this plant ; later in the season, on the tall Sunflower. The wild Bergamot and Horse-mint are much frequented by them. They are also fond of alighting on the ground in damp places, especially, late in the summer, when they are worn. I have taken them in Clear Creek and Platte canons from June 16th till end of August. *Hesperis* is a very pugnacious insect, and will circle round and boldly flap the *Lycaenas* and *Theclas* off the blossoms. I was amused one day, on the South Platte, with watching a male *Hesperis*

THE UNIVERSITY OF CHICAGO

This is the more desirable as owing to the Collection having been exhibited in England and the United States on various International occasions, many specimens have lost their color and freshness.

Printed lists will be published from time to time of *desiderata* required to fill up and replace the various sections.

Insects used by the Society in this way will be labelled in the Collection with the name and address of the donor.

It is not expected that all these will be obtained from present Collections, but members might bear in mind what is wanted, and endeavor to make special captures during the next and following seasons.

April, 1888.

Papilio	Chionobas	Lycaena
marcellus, <i>Cram.</i>	jutta, <i>Hub.</i>	comyntas, <i>Gott.</i>
crephontes, <i>Crim.</i>	Satyrus	neglecta, <i>Edwards.</i>
Phyciodes	nephele, <i>Kirby.</i>	violacea, <i>Edw.</i>
nycteis, <i>Walker.</i>	Thecla	Carterocephalus
tharos, <i>Cram.</i>	calanus, <i>Hub.</i>	maudan, <i>Edw.</i>
tharos var. marcia.	Ontario, <i>Edw.</i>	Ancyloxypha
<i>Edw.</i>	hypericii, <i>Boisd & Lec.</i>	numitor, <i>Fab.</i>
Limenitis	Edwardsii, <i>Saunders.</i>	Pamphila
ursula, <i>Fab.</i>	falacer, <i>Gott.</i>	zabulon var. pocahontas,
arthemis var. proserpina,	niphon, <i>Boisd et Lec.</i>	<i>Scud.</i>
<i>Edw.</i>	strigosa, <i>Harr.</i>	cernes, <i>Bd.-Lec.</i>
Debis	humuli, <i>Harr.</i>	Pyrgus
Portlandia, <i>Fab.</i>	titus, <i>Fab.</i>	centaureæ, <i>Ramb.</i>
Neonympha	Feniseca	Nisoniades
canthus, <i>Bd.-Lec.</i>	tarquinius, <i>Fab.</i>	persius, <i>Scudder.</i>

- Nisoniades
 brizo, *Boisd. et Lec.*
 juvenalis, *Smith.*
 Amphion
 nessus, *Cram.*
 Thyreus
 Abbotii, *Swains.*
 Philampelus
 pandorus, *Hubn.*
 achemon, *Drury.*
 Ampelophaga
 versicolor, *Harr.*
 Paonias
 myops, *Abb. & Sm.*
 Sphinx
 kalmiae, *Smith.*
 Ellema
 bombycoides, *Walk.*
 Alypia
 MacCullochii, *Kirb.*
 Scepis
 fulvicollis, *Hubn.*
 Lycomorpha
 pholus, *Drury.*
 Clemensia
 albata, *Pack.*
 Hypoprepia
 fucosa, *Hubn.*
 fucosa, *var. miniata,*
 Kirby.
 Crocota
 ferruginosa, *Walk.*
 quinaria, *Gr.*
 Treatii, *Grote.*
 rubicundaria, *Hubn.*
 Utetheisa
 bella, *Linn.*
 Callimorpha
 clymene, *Esp.*
 Platarctia
 parthenos, *Harr.*
 Arctia
 nais, *Drur.*
 decorata, *Saunders.*
 celia, *Saunders.*
 virguncula, *Kirb.*
 arge, *Drury.*
 Phragmatobia
 rubricosa, *Harris.*
 Euchates
 egle, *Drur.*
 Halesidota
 tesselaris, *Sm. Ab.*
 caryae, *Harris.*
 Euclaea
 quercita, *H. S.*
 ferruginea, *Pack.*
 Parorgyia
 Clintonii, *G. & R.*
 parallela, *Pack.*
 Limacodes
 biguttatus, *Pack.*
 Empretia
 stimulea, *Clem.*
 Phobetron
 pithecium, *Abb. & Sm.*
 Tortricidia
 testacea, *Pack.*
 Ichthyura
 inversa, *Pack.*
 albosigma, *Fitch.*
 Datana
 ministra, *Drury.*
 Nadata
 gibbosa, *Walker.*
 Prionia
 bilineata, *Pack.*
 Actias
 luna, *Linn.*
 Platypteryx
 genicula, *Grote.*
 arcuata, *Walk.*
 Dryopteris
 rosea, *Walk.*
 Eacles
 imperialis, *Drury.*
 Anisota
 stigma, *Fabr.*
 senatoria, *A. & S.*
 virginiensis, *Drury.*
 Dryocampa
 rubicunda, *Fab.*
 Clisiocampa
 disstria, *Hubn.*
 Microcoelia
 diphteroides, *Guen.*
 obliterata, *Grote.*
 Bryophila
 lepidula, *Gr.*
 Chytonix
 palliatricula, *Guen.*
 Dipthera
 fallax, *H. S.*
 Coelodasys
 unicornis, *A. & S.*
 Hepialus
 thule, *Strk.*
 Apatela
 dissecta, *G. & R.*
 grisea, *Walk.*
 Agrotis
 Normaniana, *Grote.*
 Mamestra
 distincta, *Grote.*
 Hadena
 mactata, *Guen.*
 fractilinea, *Grote.*
 Oligia
 versicolor, *Gr.*
 Anytus
 sculptus, *Gr.*
 Oncocnemis
 occata, *Grote.*
 Prodenia
 flavimedia, *Harvey.*
 Gortyna
 sera, *G. & R.*
 nictitans, *Borkh.*
 immanis, *Guen.*
 cataphracta, *Grote.*
 nebris, *Guen.*
 rutila, *Guen.*
 Achatodes
 zeae, *Harr.*
 Arzama
 obliquata, *G. & R.*
 Heliophila
 pallens, *Linn.*
 Harveyi, *Grote.*
 phragmitidicola, *Grote.*
 lapidaria, *Grote.*
 adonea, *Grote.*
 commoides, *Guen.*
 unipuncta, *Haw.*
 pseudargyria, *Guen.*
 Ufeus
 satyricus, *Grote.*
 Caradrina
 multifera, *Walk.*
 Pyrophila
 pyramidoides, *Guen.*
 Tæniocampa
 furfurata, *Gr.*
 Parastichtis
 gentilis, *Grote.*
 Ipimorpha
 pleonectusa, *Grote.*
 Nolaphana
 malana, *Fitch.*
 Aletia
 argillacea, *Hubn.*
 Marasnalus
 histrion, *Grote.*
 Calpe
 Canadensis, *Beth.*
 Plusia
 contexta, *Grote.*
 Putnami, *Grote.*
 biloba, *Steph.*
 viridisignata, *Grote.*
 mortuorum, *Guen.*

- Plusia
 ampla, *Walk.*
 Lygranthœcia
 rivulosa, *Guen.*
 Anthœcia
 arcifera, *Guen.*
 Spraguei, *Gr.*
 Anarta
 cordigera, *Thunb.*
 Tarache
 candefacta, *Hubn.*
 erastrioides, *Guen.*
 Eustrotia
 albidula, *Guen.*
 muscosa, *Guen.*
 Celiptera
 frustulum, *Guen.*
 Phoberia
 atomaris, *Hubn.*
 Remigia
 latipes, *Guen.*
 Parthenos
 nubilis, *Hubn.*
 Catocala
 unijuga, *Walk.*
 faustina, *Strecker.*
 semirelicta, *Grote.*
 briseis, *Edw.*
 parta, *Guen.*
 coccinata, *Grote.*
 ultronia, *Hubn.*
 concupens, *Walk.*
 amatrix, *Hubn.*
 cara, *Guen.*
 ilia, *Cram.*
 neogama, *Abb. & Sm.*
 subnata, *Grote.*
 Meskei, *Grote.*
 antinympa, *Hubn.*
 palaeogama, *var. phala-*
 anga.
 palaeogama, *Guen.*
 habilis, *Grote.*
 Clintonii, *Grote.*
 fratercula, *G. & R.*
 polygama, *Guen.*
 crataegi, *Saund.*
 amica, *Hubn.*
 ilia, *var. uxor*, *Guen.*
 innubens, *Guen.*
 cerogama, *Guen.*
 serena, *Edw.*
 similis, *Edw.*
 grynea, *Cram.*
 Panapoda
 rufimargo, *Hubn.*
 Erebus
 odora, *Linn.*
 Homoptera
 lunata, *Drury.*
 Saundersii, *Beth.*
 calycanthata, *Abb. & Sm.*
 albofasciata, *Beth.*
 edusa, *Drury.*
 duplicata, *Beth.*
 benesignata, *Harvey.*
 Ypsia
 undularis, *Drury.*
 umbripennis, *Grote.*
 Zale
 horrida, *Hubn.*
 Spargaloma
 sempunctata, *Grote*
 Pangrapta
 decoralis, *Hubn.*
 Pseudaglossa
 lubricalis, *Geyer.*
 Epizeuxis
 aemula, *Hubn.*
 americalis, *Guen.*
 Megachyta
 lituralis, *Hubn.*
 Litognatha
 nubilifascia, *Grote.*
 Chytolita
 morbidalis, *Guen.*
 Pityolita
 pedipilalis, *Guen.*
 Zanclognatha
 laevigata, *Grote.*
 ochreipennis, *Grote.*
 cruralis, *Guen.*
 marcidilinea, *Grote.*
 Philometra
 longilabris, *Grote.*
 serraticornis, *Grote.*
 Palthis
 augulalis, *Hubn.*
 asopialis, *Guen.*
 Renia
 Belfragei, *Grote.*
 Bleptina
 caradrinalis, *Guen.*
 Hypena
 baltimoralis, *Guen.*
 scutellaris, *Gr.*
 manalis, *Walk.*
 abalionalis, *Walk.*
 achatinialis, *Zell.*
 profecta, *Gr.*
 deceptalis, *Walk.*
 perangulalis, *Harv.*
 vellifera, *Gr.*
 Hypena
 evanidalis, *Rob.*
 scabra, *Fabr.*
 Choerodes
 clemitaria, *A. & S.*
 transversata, *Drury.*
 Metanema
 quercivoraria, *Guen.*
 Ennomos
 alniaria, *Linn.*
 Eudalimia
 subsignaria, *Hubn.*
 Endropia
 obtusaria, *Hubn.*
 effectaria, *Walk.*
 bilinearia, *Pack.*
 armataria, *H. S.*
 Therina
 fervidaria, *Hubn.*
 endropiaria, *G. & R.*
 bibularia, *G. & R.*
 Metrocampa
 margaritata, *Linn.*
 Anagoga
 pulveraria, *Linn.*
 Sicya
 macularia, *Harris.*
 Plagodis
 rosaria, *G. & R.*
 phlogosaria, *Guen.*
 alcoolaria, *Guen.*
 Hyperetis
 amicaria, *H. S.*
 Aplodes
 mimosaria, *Guen.*
 Synchlora
 rubivora, *Riley.*
 Annemoria
 unitaria, *Pack.*
 Nemoria
 subcroceata, *Walk.*
 Eucrostis
 chloroleucaria, *Guen.*
 Acidalia
 nivosata, *Guen.*
 quadrilineata, *Pack.*
 Eudeilinia
 herminiata, *Guen.*
 Aspilates
 Lintneriaria, *Pack.*
 Nematocampa
 filamentaria, *H. S.*
 Thamnionoma
 subcessaria, *Walk.*
 argillacearia, *Pack.*
 Eufitchia
 ribearia, *Fitch.*

- Caripeta
 angustiorata, *Walk.*
 Hibernia
 tiliaria, *Harris.*
 Anisopteryx
 vernata, *Peck.*
 pomataria, *Harr.*
 Cymatophora
 humaria, *Guen.*
 Tephrosia
 canadaria, *Guen.*
 anticaria, *Walk.*
 Eubyja
 quernaria, *A. & S.*
 Rheumaptera
 ruficillata, *Guen.*
 basaliata, *Walk.*
 lacustrata, *Guen.*
 hastata, *Linn.*
 Petrophora
 diversilineata, *Hubn.*
 hersiliata, *Guen.*
 Epirrita
 perlineata, *Pack.*
 cambricaria, *Curtis.*
 dilutata, *Borkh.*
 Asopia
 farinalis, *Linn.*
 squamealis, *Grote.*
 costalis, *Fabr.*
 olinalis, *Guen.*
 devalis, *Grote.*
 Botis
 octomaculata, *Linn.*
 generosa, *G. & R.*
 insequalis, *Guen.*
 marculenta, *G. & R.*
 signatalis, *Walk.*
 Botis
 niveicillialis, *Grote.*
 plectilis, *G. & R.*
 gentilis, *Grote.*
 magistralis, *Grote.*
 terrealis, *Treits.*
 submedialis, *Grote.*
 marculenta, *G. & R.*
 subdentalis, *Grote.*
 citrina, *G. & R.*
 sumptuosalis, *Walk.*
 Harveyana, *Gr.*
 Mesographa
 stramentalis, *Hubn.*
 Blepharomastix
 ranalis, *Guen.*
 Cataclysta
 fulicalis, *Clem.*
 Tetralopha
 asperatella, *Clem.*
 Phycis
 indiginella, *Zell.*
 Dakrura
 convolutella, *Hubn.*
 Argyria
 nivalis, *Drury.*
 Crambus
 Leachellus, *Zinck.*
 agitatellus var. albocla-
 vellus, *Schl.*
 albellus, *Clem.*
 bipunctellus, *Zell.*
 topiarius, *Zell.*
 Schoenobius
 longirostrellus, *Clem.*
 Cacoecia
 purpurana, *Clem.*
 cerasivorana, *Fitch.*
 Loxotegia
 afflictana, *Walk.*
 Ptycholoma
 persicana, *Fitch.*
 melaleucana, *Walk.*
 Pandemis
 limitata, *Robb.*
 Ctenectra
 puritana, *Robb.*
 Cenopsis
 Pettitana, *Robb.*
 Dichelia
 sulfureana, *Clem.*
 Amphisa
 discopunctana, *Clem.*
 Capua
 furcatana, *Walk.*
 Eccopsis
 permundana, *Clem.*
 Penthina
 nimbatana, *Clem.*
 Sericoris
 coruscan, *Clem.*
 campestrana, *Zell.*
 Pædisca
 Scudderiana, *Clem.*
 Semasia
 formosana, *Clem.*
 Timetocera
 ocellana, *Schiff.*
 Phoxopteris
 nubeculana, *Clem.*
 discigerana, *Walk.*
 spireæfoliana, *Clem.*
 Grapholitha
 interstinctana, *Clem.*

endeavoring to drive a Zygaenid moth (*Anatolmis Grotei*) off the blossoms of a large species of *Senecio*. The moth, which is a sluggish creature at all times, would not fly, but slowly backed round the corymbose head of flowers, occasionally lifting its front legs in feeble protest. *Hesperis* followed it, flapping its wings and clawing at it like a cat, till the persecuted moth at last escaped by slipping over the petals, and hanging on the under side. It is probably owing to this restless and quarrelsome disposition that individuals are so soon worn and broken. They vary much in size and in the color of the spots on under side, some being of a deep buff, others a dead white, and others with a trace of frosted silver. I have taken *Hesperis* just below the timber line, but it is not common at such elevations, nor below 6,500 feet in Colorado."

Mr. Bruce sent me eggs of this species from Denver, Colorado, which I received 9th July, 1886, and a second lot three days later. The eggs hatched at ten days, and after eating the shells, the larvæ went into lethargy. I sent them soon after to Clifton Springs, N. Y., to go in a cold room there, and they were returned 21st March, 1887, nearly all alive. But they came unexpectedly, and a month too soon, and before I could force a plant of violet for them nearly all had died. Of the few survivors, one passed 1st moult 20th April, the second 3rd May, the third 11th May, the fourth 15th, the fifth 23rd. This larva pupated 6th June, and the imago came out 16th June. Another pupated 11th June, but died before imago. The habits of the larvæ in confinement are similar to those of *Atlantis*. The butterfly is figured in Vol. 1, Butterflies of N. America.

SOME NEW NOCTUIDÆ.

BY G. H. FRENCH, CARBONDALE, ILL.

Cucullia Hartmanni, n sp.

Expanse 1.75 inches, length of body .75 inch. General color of fore wings pale gray, so suffused in places with dark gray as to give the wings a moderately dark gray cast, but not so dark as *C. intermedia*, Spey. Lines black, basal half line only indicated on the costa. T. a. line double; the inner part almost imperceptible; strongly dentate, from its origin projecting obliquely outward to a strong tooth on the fold in the discal cell,