

ing a darker band that occupies the outer two-thirds of the basal half of the wing; males with a small, oval, sub-costal sex mark. The under side is light brown, sprinkled with white scales so as to be hoary. Fore wings with a brown bar at the end of the cell, edged outside with white; a brown spot farther toward the base. Beyond the cell a somewhat zig-zag white line, beyond this a submarginal row of dark brown lunate spots. There are no tails, but three prominent teeth or angles to each hind wing. There are white fringes to both wings.

**Early Stages**—The larva is green and pubescent, longitudinal stripes on the back, the middle one pale yellow, the other two white. The head is brown. The chrysalis is grayish, with four rows of small spots, of which the two middle are black, the others ferruginous. The food plant is the pine.

**Distribution**—From the Atlantic westward to the Rocky Mountains. In Montana it has been taken at Miles City by Wiley, and at Bozeman by Cooley. So far as we know at present it has not been taken west of Bozeman.

**THE ERYPHON HAIR-STREAK, *Incisalia eryphon* Boisduval. Fig. 94.**

**Butterfly**—Closely resembles *niphon*, both on the upper and under side of the wings, but easily distinguished by the fact that on the under side of the fore wings the inner of the two dark bands on the outer third of the wing is not sharply angulated below the third median nervule, and is in general parallel with the sub-marginal line.

**Early Stages**—These have not been described.

**Distribution**—A Pacific coast species that has travelled across the mountains eastward as far as Miles City, Montana, where it has been collected by Wiley. Cooley has collected it at Bozeman and Brandegee at Mount Ascension near Helena, east of the range. We have collected it Missoula and at Lo Ho Hot Springs.

**THE BROWN ELFIN or AUGUSTUS BUTTERFLY, *Incisalia augustus* Kirby.**

**Butterfly**—Expanse, .90 inch, 23 mm. Brown on the upper side, paler on the under side. The fore wings are marked below by a straight incomplete median band, and the hind wings by an irregular curved median band or line. Back of these lines toward the base both wings are darker brown. The outer half of the lower surface of the hind wings a pretty uniform rust red, darkest near the margin.

**Early Stages**—The caterpillar is "carmine red," covered with very short hair, each segment involute above, with double foveae. The chrysalis is pitchy brown, covered with very short bristly hair, the wing cases paler. Holland says the food plant is unknown. Fiske thinks from actions the food plant is the blueberry.

**Distribution**—The species is found in New England and northward and westward into the British Possessions. It is a boreal species. Elrod has taken it at Missoula, Cooley at Bozeman at 5,400 feet, May 31, 1900.

**Genus CALLOPHRYS, Billberg.**

**THE GREEN WHITE-SPOTTER HAIR-STREAK, *Callophrys dumetorum* Boisduval.**

**Butterfly**—Expanse, 1.10 inches, 27 mm. Dark fawn-color above, sometimes tinged externally with reddish. On the under side both wings

are green, the primaries having a short straight band of white spots on the outer third, and the secondaries a small white spot on the costa beyond the middle, and two or three conspicuous white spots near the anal angle.

**Early Stages**—We know practically nothing of these.

**Distribution**—The Rocky Mountains and California.

**Genus ERORA Scudder.**

**THE EARLY HAIR-STREAK, *Erora laeta*. Edwards.**

**Butterfly**—Expanse, .75 inch. The wings are brown, glossed with bright blue above; on the under side pale fawn, with a band of pale red spots on both wings about the middle, and a few similar spots on the outer and inner margins of the hind wings.

**Early Stages**—Unknown, save that the egg has been described by Scudder.

**Distribution**—Dyar gives it as Montana and Colorado. Holland says it has been taken in Arizona. It is rare in collections. We have not taken it.

**Genus STRYMON.6Hubner.**

**THE CORAL HAIR-STREAK, *Strymon titus* Fabricius.**

**Butterfly**—Expanse, 1.30 inches. 32 mm. Upper surface dark brown, with or without an outer marginal row of orange spots or an indistinct orange band; males with discal stigma. Under surface soft slaty brown, sometimes tinged with violaceous; outer half of wings crossed by a series of black spots, encircled or bordered without with white; between these spots and outer margin is a series of small black lunules, bordered within with white and followed without by a corresponding series of coral red or orange spots, indistinct or wanting on the fore wings, prominent on the hind wings.

**Early Stages**—The caterpillar when full grown is seven-eighths of an inch long, elliptical in shape, heavy, very small, bilobed, and shining, with a streak of dull white across the front above the mandibles. Body above dull green, with a yellowish tint especially on the anterior joints, and thickly covered with very short brown hairs. A dark green dorsal line from joint two to four; a patch of dull pink on anterior joints. On the posterior joints is a much larger rosy patch, extending from the posterior of joint nine to the end of the body. Posterior part of the body suddenly flattened, side acutely sloped. The chrysalis is .45 inch long, glossy pale brown, with many small dark brown dots, and thickly covered with very short brown hairs, too fine to be seen without a lens. The larva feeds on the wild cherry and plum.

**Distribution**—It occurs from the Atlantic to the Pacific, from Maine to Georgia. At the present time a single specimen has been taken in the state, at Missoula. It is therefore quite rare. Coubeaux has a specimen collected at Big Sandy. Coues collected a single specimen in 1874 among the mountains of our northern border, called by Edwards *Thecla mopsus*.



Genus *GAEIDES*, Scudder.*EDITH'S COPPER*, *Goeides editha* Mead. Fig. 98.Fig. 98. *Gaeides editha*.

**Butterfly**—Expanse, 1.25 to 1.35 inches (31 to 34 mm.) Male fuscous above, narrowly edged with black along the outer margin, and with black discal bar; the usual spots show through very faintly on the upper side. Hind wings fuscous, with similar black edge, and within this a row of four or five black spots near the anal angle. The two nearest this angle are surrounded by an irregular ochraceous line. Under side of fore wings gray inclining to fuscous, cinereous on the disc, with the black spots as allied species. Hind wings below gray-fuscous clouded with white. A rather broad band of gray-fuscous occupies the outer margin; this band is crenated inwardly and cut by a fulvous line which begins on the abdominal margin, extends out on the submedian and last branch of median nervules, thus leaving a white, black pupiled half-ocellus at anal angle, a large gray-fuscous crescent in the next interspace, and next to this a white, black-pupiled ocellus; in this respect the present species resembles *Xanthoides* and differs from *Dione*, which has much more fulvous. At the inner edge of the gray-fuscous band the white clouding is condensed into a continuous line of broad lunules, and at the inner border of this is the row of spots always found in this genus; these spots are quite large, pale gray-fuscous, edged with black and surrounded by white; the discal bar is usually confluent with the dot within the cell, so as to form an irregular horse-shoe mark.

Fringes of all the wings composed of scales of two lengths, the upper and shorter set being nearly black, the lower ones white; sometimes the black scales are a little longer in certain places, thus making the fringe seem white cut with black.

The last branch of median nervule of hind wings prolonged into a very slight tooth; this is more distinct in the female, being there about as in *Xanthoides*, male.

The female differs from the male in always having at least a small fulvous or ochraceous cloud upon the disc of fore wing, and a similarly colored streak at the outer angle. The cloud upon the disc is sometimes so extended as to cover half the surface of the wing. The spots of lower surface are rather distinctly shown above. In the middle of secondaries there is often an iroration of fulvous scales and a distinct scalloped fulvous line along the outer margin, enclosing a black crescent, or double dot near anal angle and smaller dots above.

Under side like the male, but brighter, and with markings more distinct; a fulvous tint is also seen at outer angle of primaries.

This pretty little species may be distinguished from *Xanthoides*, its nearest ally, by its smaller size, the much more convex outer margins and more rounded outer angle of primaries, the blunter tooth of secondaries, the white clouding below and the large size of all the spots. (The above is a copy of the original description.)

**Early Stages**—Unknown.

**Distribution**—The species is recorded from Montana and Nevada. In the state it has been taken at Bozeman (2) by Cooley, and in the Swan Range, at 7,000 feet, near the Biological Station.

**THE GREAT COPPER, *Gaides xanthoides*, Boisduval.**

**Butterfly**—Expanse, 1.50 to 1.60 inches.

The species is easily recognized by its size, which is the largest of the group in North America, and by its creamy-white under surface, spotted with distinct small black spots, in large part reproducing the spots of the upper side.

**Distribution**—The species is reported from California and Montana. In the state it has been taken by Brandegee at Helena (1), and by Wiley at Miles City (2).

**Genus EPIDEMIA Scudder. Fig. 99.**

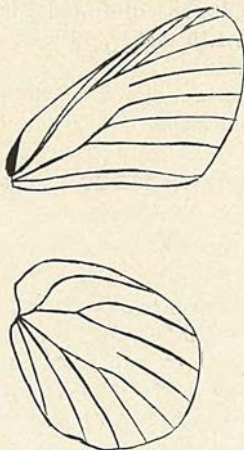


Fig. 99. Venation of *Epidemia*.

**THE PURPLISH COPPER, *Epidemia hellioides* Boisduval. Fig. 100.**

**Butterfly**—The male has the fore wings broadly shot with iridescent purple. The female has the fore wings of fulvous, with a broad black border. On the under side, the fore wings are pale fulvous, the hind wings a tan color, with a marginal row of brick red crescents. The usual black spots are found on both wings. Expanse, 1.15 to 1.30 inches, 29 to 32 mm.

**Early Stages**—These are practically unknown.

**Distribution**—The University of Montana collection has over a hundred specimens taken at Missoula, Flathead Indian Reservation, and Uni-



versity of Montana Biological Station by Elrod, by Douglas at Fish Creek in Sweet Grass County. It was abundant at the Biological Station at Bigfork in 1903, and in August, 1904. Cooley has many specimens from Bozeman, and Wiley collected many at Miles City. Brandeggee has it in his collection from Helena. It has been taken by Coubeaux in the Little Belt and Bear Paw Mountains.

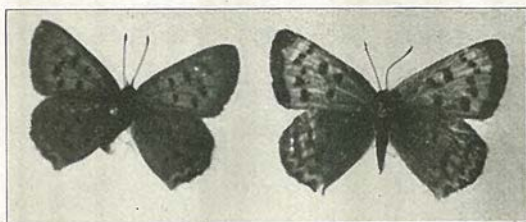


Fig. 100. *Epidemia helloides*, left figure male, right, female.

**REAKIRT'S COPPER, *Epidemia mariposa* Reakirt.**

**Butterfly**—Small, with a broad dusky band on the wind wing of the male, and on the fore wing of the female. The male is purplish red above, the female bright red with the usual spots. On the under side the fore wings are pale red, the hind wings clear ashen grey, with the markings. Expanse, 1.10 inches, 28 mm.

**Early Stages**—Undescribed.

**Distribution**—The species ranges from British Columbia into northern California, Montana and Colorado. We have taken it in the Yellowstone National Park.

**Genus HEODES, Dalman.**

**The Coppers.**

**THE AMERICAN COPPER, *Heodes hypophleas* Boisduval.**

**Butterfly**—Expanse, 1 inch, 25 mm. Upper surface of fore wings shining fulvous with a blackish brown border, narrow on the costa and hind margin. Beyond the cell is a row of prominent black spots. Hind wings blackish brown, and a terminal fulvous band, not reaching the apex, containing four black spots on the edge; at the end of the cell a black bar. Under side of fore wings fulvous, paler than above; the apex and whole of hind wings grey.

**Early Stages**—Eggs nearly round, a little flattened at the apex. They are pale green overlaid with a white network. The larva is elliptical, dull rosy-red, with a yellowish tint on the under side. The body is downy. The chrysalis is attached by the end of the abdomen.

**Distribution**—Found in northern, middle, and western states. Not rare at Miles City (Wiley). We have not taken it.

**Genus CHALCERIA Scudder.**

**Key to Species.**

Under side of fore wings same color as upper, spots repeated	snowi
Under side shining white	rubidus

SNOW'S COPPER, *Chalceria snowi*, Edwards. Fig. 101.Fig. 101. *Chalceria snowi*.

**Butterfly**—Expanse, 1.15 to 1.25 inches, 28 to 31 mm. A medium-sized species, easily recognized by the even, rather black border on both wings on the upper side, and the dirty-gray color of the hind wings on the under side. The color above is red, brighter than *rubidus*, black border to both wings, dark at base. A row of black spots across each wing about one-third the distance from the apex to the base. Two black spots in the discal cell of the front wing, a larger spot at the outer end of the cell.

Under side of fore wing same color as upper, the spots repeated. Antennae black, tipped with reddish fulvous; palpi, legs and body clothed with white hair.

**Early Stages**—Unknown.

**Distribution**—It is found in Colorado at high elevations, and is reported from Alberta and British Columbia. Only one specimen in the collections examined, taken by Cooley in Gallatin county, July 12, 1902, at 9,400 feet.

**Remarks**—The species is named in honor of Chancellor Snow, of the University of Kansas and occurs at high elevations. It is a beautiful and delicate little creature, worthy of the effort necessary to capture it.

#### THE RUDDY COPPER, *Chalceria rubidus*, Behr. Plate I.

**Butterfly**—Rather large species; the male on the upperside is pale lustrous red, with a narrow black marginal band and uniformly conspicuous white fringes. The upperside of the female is a little lighter in the ground color; on the underside the wings are shining white, the secondaries immaculate. Expanse, 1.30-1.50 inches.

**Early Stages**—Unknown.

**Distribution**—The species is found in Oregon, Nevada and Montana. Wiley records it as rare at Miles City. Brandegee has one specimen from Gold Creek and Cooley one from Bozeman. Coubeaux has one specimen taken at Livingston. Dr. Elliott Coues took a single specimen near Three Buttes, August 8, 1874. Edwards says Dr. Hayden sent him occasional specimens from Montana. It seems to be everywhere rare.

#### Genus CUPIDO, Schrank.

#### THE LYCAEA BLUE, *Cupido lycaea*, Edwards, Plate XI, 1 and 2.

**Butterfly**—Expanse, 1.25 to 1.40 in., 31 to 35 mm. The adult male is pale blue above, the margins pale dusky. The black marks do not show through. The female is dusky, the wings shot with blue at their bases.



On the underside the wings are whitish. There is a row of black spots on the fore wings and a bar at the ends of the cell. The hind wing has also a row, but not so large.

**Early Stages**—These await description.

**Distribution**—The butterfly is found in the region of the Rocky Mountains, from New Mexico to Montana. The University of Montana collection has many specimens, collected as follows: at Madison Lakes by Douglas, at New Chicago by Fred D. Smith and Douglas, at Missoula by Elrod, and at Sinyaleamin Lake in the Mission Mountains by Elrod. At Sinyaleamin lake large flocks assembled about camp on the lake bank. Cooley has two from Bozeman, one from 5,800 feet altitude. Coubeaux reports it rather common in the mountains near Big Sandy.

**THE GREENISH BLUE, *Cupido saepiolus*, Boisduval. Plate XI.**

**Butterfly**—The male on the upperside has the wings blue, shot in certain lights with brilliant green. The female on the same side is dusky, with greenish blue scales at the bases of the wings and often with reddish markings on the outer margin of the hind wings. On the underside, the wings are gray or pale wood-brown with greenish blue at their base and a profusion of small spots margined with white. Expanse, .95-1.10 in.

**Early Stages**—These have not been studied.

**Distribution**—The species ranges from British Columbia to Colorado. In western Montana this is a very common species. On the mountain slopes by the University it abounds in early spring, collecting in considerable numbers by the damp places. Along the roadside in the mountain canyons it is a conspicuous figure. It is found throughout the Mission Mountains and around the Biological Station at Flathead lake.

**Genus *NOMIADES* Hubner.**

**THE SILVERY BLUE, *Nominades lygdamas* Doubleday.**

**Butterfly**—Expanse, .85 to 1.10 inches, 21 to 27 mm. Upper side of wings of male pale silvery blue, narrowly edged with black; the wings of the female above darker blue, dusky on the borders, with a dark spot at the end of the cell of the primaries. Under side of wings pale chocolate brown, with a submarginal band of black spots, margined with white, on both wings, as well as a spot at the end of the cells, and one or two on the costa of the secondaries.

**Early Stages**—These are unknown.

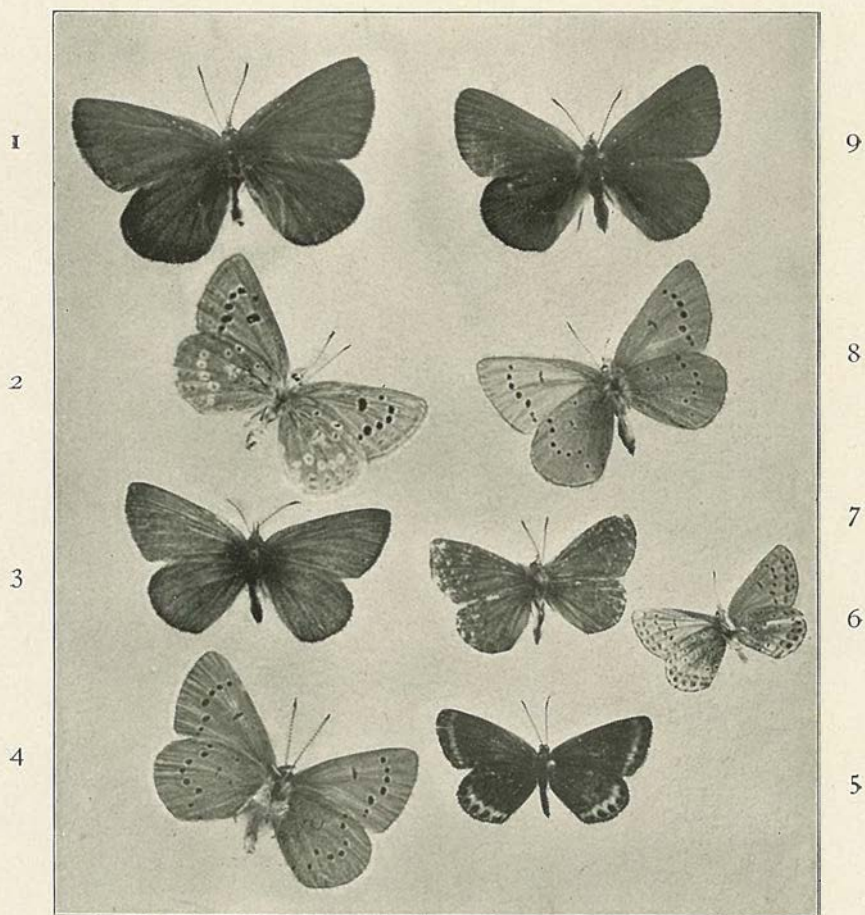
**Distribution**—Found in the South Atlantic states, Colorado, California, New Mexico, and in the Kootenai district of British Columbia. In the state collected by Brandegees at Helena, one male, and by Cooley at Bozeman, two males.

**Genus *AGRIADES* Hubner.**

**THE RUSTIC BLUE, *Agriades rustica*, Edwards. Fig. 102B.**

**Butterfly**—Expanse, .90 to 1.00 inches, 23 to 25 mm. Male bright blue above, female darker. Under side pale-gray on the secondaries, with white spots; primaries with a row of black spots, and a discal black spot bordered with white.

**Early Stages**—Unknown.



1, *Cupido lycaea*, male; 2, under side of same; 3, *Cupido saepiolus* male; 4, under side of same; 9, female of same; 8, under side of female of same; 7, *Rusticus melissa*, male, upper side; 6, under side of same; 5, upper side of female.





**Distribution**—Found in Colorado, Montana and British America. In the state taken at Bozeman by Cooley, one specimen, and at Bear Paw Mountains by Coubeaux.

**Genus RUSTICUS Hubner.**

**Key to Species.**

Orange red or pinkish band on the hind wings	acmon
Dark crescents of the under side showing as spots on the upper side	glaucou
Male with narrow black marginal line and white fringes	melissa
Male with wings colored dirty gray below, with black spots	shasta

**THE ACMON BLUE, *Rusticus acmon* Doubleday and Hewiston.**

**Butterfly**—Male blue; female brown. It may be distinguished by the broad orange-red or pinkish band on the hind wings, marked by small black spots. On the underside it is marked much like *L. melissa*. Expanse, .90-1.10 in.

**Early Stages**—Unknown.

**Distribution**—It is found from Arizona to Washington and Montana.

The University of Montana collection contains two specimens from the Yellowstone National Park. Brandegee has it in his collection from Helena.

**THE COLORADO BLUE, *Rusticus glaucou*, Edwards.**

**Butterfly**—Purplish blue, having the dark crescents of the underside showing as spots on the upper side. The female has a band of orange spots on the margins of the secondaries. Expanse 1.00 inch, 25 mm.

**Early Stages**—Unknown.

**Distribution**—It ranges from Washington to California and eastward to Colorado, where it is quite common in the mountain valleys. The University of Montana collection contains 3 specimens; 1 from Missoula, and 2 from Geyser Basin.

**THE ORANGE-MARGINAL BLUE, *Rusticus melissa*, Edwards.**

Plate XI, 5, 6 and 7, and Fig 102.

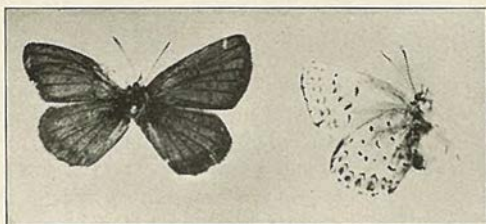


Fig. 102. *Rusticus melissa*, male, upper and lower surfaces.

**Butterfly**—The male on the upperside is pale blue, with a narrow black marginal line and white fringes. The female is brown or lilac-gray, with a series of orange red crescents on the margins of both wings.



On the underside the wings are stone-gray, with the usual spots, and on the secondaries the orange colored marginal spots are oblong, tipped inwardly with black and outwardly by a series of metallic green maculations. Expanse, .90-1.15 in.

**Early Stages**—Very little known.

**Distribution**—It is found from Kansas to Arizona, and northward to Montana. The University of Montana collection contains specimens from the Mission Mountains, Flathead Indian Reservation, Missoula, New Chicago (Smith). It is reported as common at Miles City (Wiley). It is abundant around the University of Montana Biological Station at Flathead Lake. Taken by Couzeaux in the Bear Paw Mountains. Allen has it from Dillon. Coues collected a number of specimens from a number of localities along our northern border in 1874.

#### THE SHASTA BLUE, *Rusticus shasta*, Edwards.

**Butterfly**—The male is blue; the female brown. On the underside the wings are a dirty gray, with black spots, and in addition, on the hind wings, there are a number of small marginal spots, surmounted by metallic colored bluish green scales. Expanse, 1.00 inch.

**Early Stages**—These have not been described.

**Distribution**—It is found in Montana and Nevada. It is also reported from northern California and Oregon.

There are two specimens from Martinsdale in the University of Montana collection.

#### Genus *CYANIRIS* Dahlman.

#### THE COMMON BLUE or SPRING AZURE, *Cyaniris ladon*, Cramer.

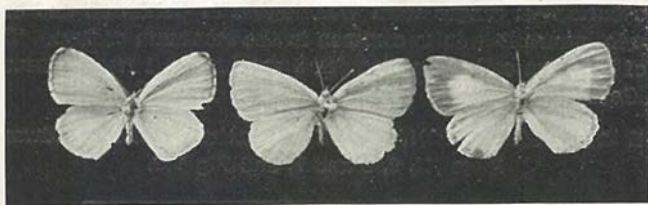


Fig. 102A. *Cyaniris ladon*, slightly reduced.

**Butterfly**—Expanse of wings, 9 inch to 1.4 inches, 23-25 mm. The species is subject to great variation. In general terms, the upper side of the wings of the male is a deep azure-blue with a delicate terminal black line. Fringes black on the apical part of the wings, but white barred with black on the rest of the fore wings and on the hind wings.

The fore wings of the female have a broad blackish outer border, in some examples extending along the costa. The hind wings have a blackish costa, and a row of dark spots along the outer margin. The ground color is usually a lighter blue on the females than on the males.

The under side is a very pale silvery gray, with a silky lustre, and there are the following pale brown markings: a row of spots along the outer margin, each preceded by a crescent; a curved row of alongate spots across the disk of the fore wings; and several small spots on the basal part of the hind wings.

The butterfly exhibits a very complicated polymorphism, both seasonal and sexual; nine forms are now recognized by entomologists. The form occurring in Montana is *C. ladon ladon*.

**Early Stages**—Length, two-fifths of an inch, slug shaped, dark brown head. Body white with a dusky line down the back and a greenish tinge along the sides.

**Food**—The larvae feed on dogwood, actinomeris, black snake-root, sumac, spiraea and many other plants.

**Distribution**—Its distribution is very wide, extending from Alaska south to Arizona, east to the Gulf of Mexico, and north to the St. Lawrence. Coubeaux reports it abundant around Big Sandy.

**THE WESTERN TAILED BLUE, *Everes amyntula* Boisduval.**



Fig. 102B. *Everes amyntula*, the two right hand figures, and *Agriades rustica*, left hand figure.

**Butterfly**—"Closely resembling *L. comyntas*, of which," says Holland, "It may be only a slightly modified western form. Until the test of breeding has been applied we cannot be sure of this."

**Description of comyntas**—Expanse of wings from .7 to 1 inch, 18 to 25 mm. Hind wings with one thread-like tail. The males are dark violet-blue above, with a narrow blackish outer border. Along the outer margin of the hind wings are several black spots, and usually one or two orange crescents. The female are blackish brown, some specimens with bluish at the base. The black spots of the hind wings are often obscure.

Underside whitish gray; both wings with a double row of spots along the outer margin, the inner row crescents; between this and the cells a row of black spots circled with white, the row on the hind wings broken twice. There is also a bar at the end of each cell, and on the hind wings a spot in the cell, and one above. Near the anal angle are two or three orange crescents, enclosing each a black spot with a circle of silver scales.

*Amyntula* differs from the above as follows: The males are lighter blue above, the dark border much reduced. The black spots prevail, reduced, but the orange crescent has reduced to a black spot. The females are brownish black with a trace of coppery brown, the primaries with a large wash of blue over the posterior portion. The black spots are larger than in the male.

**Early Stages**—Unknown.

**Distribution**—It ranges from the eastern foothills of the Rocky Mountains to the Pacific in British America and the northern tier of western states. There are seven specimens in the University of Montana collection from Sinyaleamin lake in the Mission Mountains. Coubeaux collected it in the Bear Paw Mountains.



## Butterfly Fancies.

---

Bits of fancy on the wing  
In the sunbeam hovering,  
Nimble on the breezy air,  
Can you be without a care,  
Thronging butterflies?

Once a caterpillar shroud,  
Now in brightest winged crowd,  
Life's intangible mysteries,  
Unimprisoned fantasies,  
Gauzy butterflies.

Better than the rival woods,  
All of Nature's varied moods,—  
Tints of dark and light, portraying  
As with Nature's artist playing,  
Dancing butterflies.

Whitens caught from mountain-crown,  
Softest greys and sombre brown,  
Brushed with dust of finest sift,  
Streaked with blue, a storm-cloud rift,  
Gleaming butterflies.

Vieing with the veering Wind  
In thy wooing unconfined,  
Near all flowers thy list'ning ear,  
Trembling like a fluttering fear,  
Vagrant butterflies.

Fanning blushes of the roses,  
Ever changing are thy poses,  
Couriers fleet of fairy news  
Whisp'ring of the coming dews,  
Cunning butterflies.

Skimming perfumed meadow lots,  
Ye are Nature's sweetest tho'ts,  
Fit to flit with soul of child,  
Fairies fed with honey wild,  
Golden Butterflies.

Hither, thither, in delight,  
Circling round in rhythmic flight,  
If we had but keener ear,  
Could we more of music hear,  
Lyric butterflies?

Golden links in summer's chain,  
Tell me all my heart would fain;  
Give to me thy revelations,  
Incarnate imaginations,  
Fleeting butterflies.

Sleeping in a rose's breast,  
By her paling petals prest,  
Fainting as her heart throb's cease,  
While the walls of winds increase,  
Dying butterflies.

—ALBERTINE WARD.

University of Montana, June 1, 1905.



### THE SKIPPERS, SUPERFAMILY HESPERIINA.

Some authors consider the skippers to constitute a superfamily distinct from the butterflies. They are called skippers on account of their peculiar mode of flight. They are day-fliers, like butterflies, darting suddenly from place to place. When at rest most species hold the wings erect in a vertical position like butterflies; in some the fore wings are so held, the hind wings being extended horizontally. The antennae are thread-like, and enlarged toward the tip; but in most cases the extreme tip is pointed and recurved, forming a hook. The abdomen is usually stout, resembling that of a moth rather than that of a butterfly. Skippers are most easily distinguished by the peculiar venation of the fore wings, see Fig. 102, the radius being five-branched, and all the branches arising from the discal cell (R.—M. of Comstock).

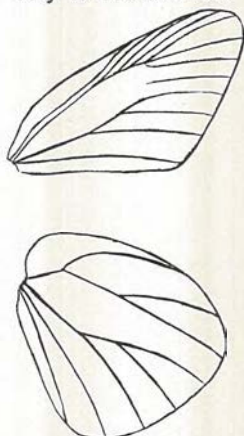
There are two families of skippers, the Megathymidae or **GIANT SKIPPERS**, and the Hesperiidæ or **Common Skippers**. The former is not reported from the state, and hence not included in this list.

#### THE COMMON SKIPPERS. Family Hesperiidæ. Fig. 102.

The figures following represent the family. The larvae have large heads and strongly constricted necks. They usually live concealed in a folded leaf or in a nest made of several leaves fastened together. The pupae are rounded, not angular, resembling those of moths more than those of butterflies. The pupa state is passed in a slight cocoon, which is generally composed of leaves fastened together with silk and thinly lined with the same substance.

Fig. 102. Venation of Hesperiidæ.

Key to Subfamilies.



Antennae usually ending with a finely pointed terminal crook, occasionally without crook and ending bluntly; males usually with a brand on the fore wings, never with a costal fold. Skippers with a brand and their allies  
Pamphilinae, P. 150

Antennae usually with a long club which is bent at a considerable distance from the tip; males almost invariably with a costal fold, never with a brand. Skippers with a costal fold and their allies  
Hesperiinae, P. 143

#### Subfamily Hesperinae.

In this subfamily are included the larger of the common skippers, as well as some that are of smaller size. Most of the species are dark brown, marked with white or translucent, angular spots. The antennae usually have a long club, which is bent at a considerable distance from the tip. The venation is shown in Fig. 102. The most distinctive feature is exhibited by the males alone, but is lacking in some species. This consists in a fold in the fore wing near the costal margin, which forms a long, slit-like pocket, containing a sort of silky down. This is a scent organ. Tubular scales, the *androconia*, open into it. This pocket is difficult to see when the pocket is closed.

#### Key to Genera.

1. Fore wings with a broad, bright yellow band near the middle 2.  
Fore wings not crossed by a broad, bright yellow band 3.
2. With a large silvery-white spot in the center of the lower side of the hind wings Epargyreus, P. 143
3. Upper surface of wings black or brown, with a few white spots on the fore wings or with none, hind wings not checkered with white 4.  
Both fore and hind wings checkered with many white spots 9.
4. Club of antennae hooked; anal angle of hind wings slightly prolonged Cocceius, P. 144  
Club of antennae sickle-shaped; anal angle of hind wings rounded 8.  
Club of antennae thickened at the end, which is obtuse and bare 5.
5. No costal fold in the male Hesperopsis, P. 6.  
A costal fold in the male 6.
6. A pair of long lobes covering a bare hollow at base of abdomen of male Scelothrix, P. 7.  
These lobes short or absent 7.
7. Hind tibiae with a hair pencil Heliopetes  
Hind tibiae without a hair pencil Pyrgus, P.
8. Fore wings entire, with a costal fold in the male; costal fold short, less than half the margin Pholisora, P. 10.  
Costal fold of the male long; over half the margin 10.
9. The white spots in the band just beyond the middle of the fore wings much broader than high Pyrgus, P.  
The white spots in the band just beyond the middle of the fore wings but little if any broader than high Scelothrix, P.
10. Third joint of palpi moderate, less than twice as long as wide Thanaos

#### Genus EPARGYREUS.

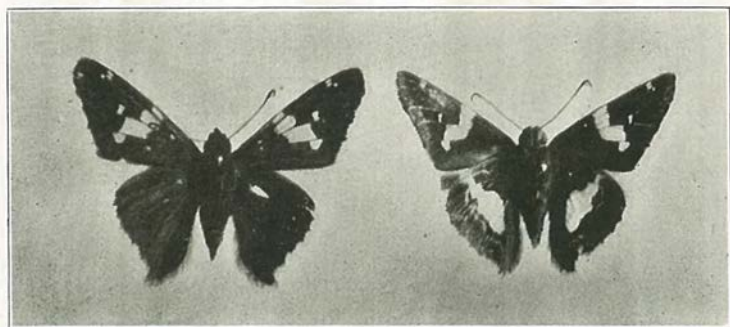
#### Key to Species.

1. Hind wings more or less produced or tailed at the anal angle 2.  
Hind wings produced not tailed
2. Under side of hind wings with a silver band in the middle tityrus



THE SILVER-SPOTTED SKIPPER, *Epargyreus tityrus*, Fabricius.

Fig. 103.

Fig. 103. *Epargyreus tityrus*, upper (left) and lower (right) surfaces.

**Butterfly**—Expanse, 1.75 to 2.00 inches, 43 to 50 mm. Upper surface dark brown. The fore wings are crossed by an oblique yellow band of four large, spots, from the middle of the costa to near the posterior angle, where it ends in a rounded spot. Beyond there is a narrow spot in the first median interspace extending from vein to vein. Fringes gray and brown at the edge of veins. Underside about the same, but this hind wings have a conspicuous silvery white band in the middle, nearly reaching the costa; palpi brown, slightly yellowish beneath.

**Early Stages**—The egg is nearly globular, flattened at the base, with fifteen ridges from the base to apex. Color white, with a bright red spot at apex. The young larva is orange; head short, a few scattered over the body. It feeds upon the common locust, rose, acacia, wistaria, and a species of wild bean.

**Distribution**—It is found quite generally over the entire United States, more abundantly eastward. In Montana it has been taken by Wiley at Miles City, by Brandegee near Helena, and by Elrod at Flat-head lake.

Genus *COCCEIUS*.THE NORTHERN DUSKY-WING, *Cocceius pylades*, Scudder.Fig. 103A. *Cocceius pylades*, slightly reduced.

**Butterfly**—Expanse, 1:60 inches, 40 mm. Brown above, darker at base of wings and anal angle; the white spots on the fore wings are mere points, the number and size varying. On the under side the wings are dark brown, shading into hoary-gray on the outer margins. The hind wings are crossed by an irregular basal, median, and post-median brown bands of darker spots, shaded with deeper brown internally. The translucent spots of the upper side reappear on the lower side of the fore wings.

**Early Stages**—The larva feeds on clover and other plants.

**Distribution**—The insect is found throughout the United States and Canada, but is not yet reported from the central masses of the Rocky Mountain region (Holland). Dyar gives it in his list. We have not taken it in the state. Wiley's collection contains one specimen from Miles City, June, 1893; Coubeaux has two specimens from near Big Sandy, 1904.

#### Genus *SCELOTHRIX*.

#### THE GRIZZLED SKIPPER, *Scelothrix centaurea*, Rambur.

Fig. 104.

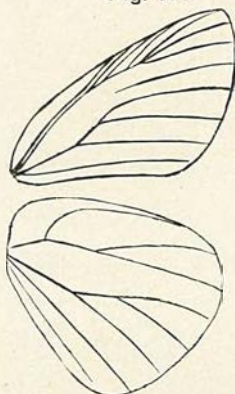


Fig. 104. Venation of *Scelothrix*.



Fig. 105. *Scelothrix Centaurea*.

**Butterfly**—Expanse, about 1.25 inches, 31 mm. Upper surface black, tinged with brown, sprinkled somewhat with white scales over the basal half. There is a bar of white in the end of the cell of the fore wings, a less distinct spot of the same below the middle of the cell, and a sub-terminal row of white spots. There are first three spots in the sub-costal



interspaces three-fourths of the distance from the base to the apex; two spots beyond the cell, the upper half way from the third spot to the margin; spot five inline with the first three; and an oblique row of four more,—two in the median interspaces and the other two in the medio-submedian interspace, one next to each vein. Besides this, the cross vein at the end of the cell has some white scales. In addition to these, there are five white spots on the costal edge.

The hind wings have two obscure rows of white spots, the first crossing the end of the cell, the spot on the cell being the most distinct; the second sub-terminal, consisting of a series of inter-venular, somewhat sagittate spots. Fringes white, cut with black at the ends of the veins.

Under side a little paler than the upper, sprinkled over with white scales so as to be grayish brown. The spots of the fore wings are repeated, but enlarged and coalescing. The hind wings have three distinct bands of white, one near the base which does not show on the upper side, consisting of three patches united; the middle one enlarged and blended; the sub-terminal one not much more prominent than on the upper surface.

Body black above, with gray hairs, the scales and hairs below white; antennae annulate with black and white; top of club ferruginous.

**Distribution**—From the Atlantic coast in New York, West Virginia and North Carolina westward to Colorado, north to Montana. In Montana it has been taken by Elrod at Sinyaleamin lake in the Mission mountains (two); Brandegge has one in his collection from Presto Pass, near Helena; Cooley has one from Shields river at elevation of 9,000 feet. These two last are small and quite dark, but have the characteristic markings of the species.

**THE SMALL CHECKERED SKIPPER, *Scelothrix scriptura*, Boisduval.**

Fig. 106.



Fig. 106. *Scelothrix scriptura*.

**Butterfly**—Small, expanse .85 inch, 21 mm. The hind wings on the upper side are about entirely dark gray, the only white being a spot or two at the end of the cell. The fore wings above marked somewhat as in *centaurea*. On the under side the fore wings are blackish toward the base, with the costa, the apex, and the outer margin narrowly whitish. The hind wings below are pale, with an incomplete median band of white spots and broad white fringes, which are not checkered with darker color as in the preceding species.

**Early Stages**—These are unknown.

**Distribution**—We have not seen it in the state, nor is it in any of the collections we have examined. It is reported from California, Arizona and Montana.

**Genus** *HELIOPETES* Billberg, *Helopetes syrictus*, Fabricius.

This species is reported by Edwards among the specimens collected by Carington and Logan in 1871.

**Genus** *PYRGUS*.

**THE CHECKERED SKIPPER**, *Pyrgus montivaga* Reakirt, or *Hesperia tessellata*, Scudder. Fig. 106a.



Fig. 106A. *Pyrgus montivaga*.

**Butterfly**—Expanse, about 1.20 inches, 30 mm. Male: Upper surface black, the basal third and hind margin of fore wings overlaid with white hairs, as also the inner part of the hind wings. The outer two-thirds of fore wings contain about thirty white spots arranged somewhat in four irregular transverse rows; and five more on the costal edge. The hind wings have about eighteen spots, arranged in three rows, the spots of the inner row the largest, the middle ones crescent, the outer ones points. Fringes white, with black at the ends of the veins.

Under side of fore wings yellowish white along the costa and the outer margin, the spots of the upper surface repeated, but more or less blended, the space between the spots brownish black. Hind wings white, faintly yellowish; a spot near the base, two irregular transverse bands, and a marginal row of lunules are brownish, these corresponding to the spaces between the rows of white above.

Female—Darker, owing to the spots being smaller, the marginal row of points sub-obsolete. Under side also darker.

**Distribution**—From Pennsylvania to the Gulf of Mexico, from the Atlantic to the Pacific. In the state it has been taken by Barnes at Aldridge (one); by Elrod at Flathead lake (one) and at Swan lake (one); Wiley has many specimens in his collection from Miles City; Coubeaux has collected it in the Bear Paw Mountains. Collected by Coues along the northern border in 1874.

**Genus** *HESPEROPSIS*.

**THE LENA SKIPPER**, *Hesperopsis lena*, Edward.

**Butterfly**—Expanse, male, 1.1 inches, 28 mm., female 1.15 inches, 30 mm. Upper side dark brown, glossy; primaries have three small white spots, with traces of a fourth, in an oblique bar from costa, at four-fifths the distance from base to apex; a small spot in cell near outer end; and three minute spots in median and submedian interspaces, two being in the latter, these about three-fifths the distance from base to hind margin. Secondaries immaculate. Fringes concolored.



Under side of primaries dark brown, grayish at base and over apical area, more particularly when seen obliquely. Secondaries gray-brown, caused by a uniform sprinkling of whitish scales over the brown surface; without spots except a transverse abbreviated white dash on middle of disk.

**Female**—Color of the male; the white spots conspicuous, forming a discal row quite across primaries; a large spot in cell, and a small one in submedian interspace near base. Under side of both wings as in the male, except that the three costal spots of discal row are repeated, and the spot in cell, but all are reduced.

From one male and one female taken in Montana by Mr. Morrison, 1881. In all four examples were taken.

We have not taken it, nor have we seen any specimens we could refer to the species. Dyar says he has not seen any certainly determined specimens.

#### Genus PHOLISORA, Scudder.

The Sooty-wing, *Pholisora catullus* (Phol-i-so'ra ca-tul'lus) Fabricius... Plate XII, and Fig. 107.

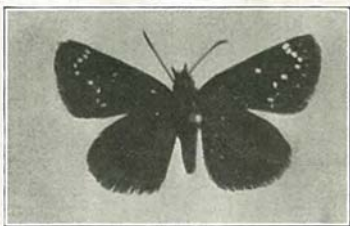


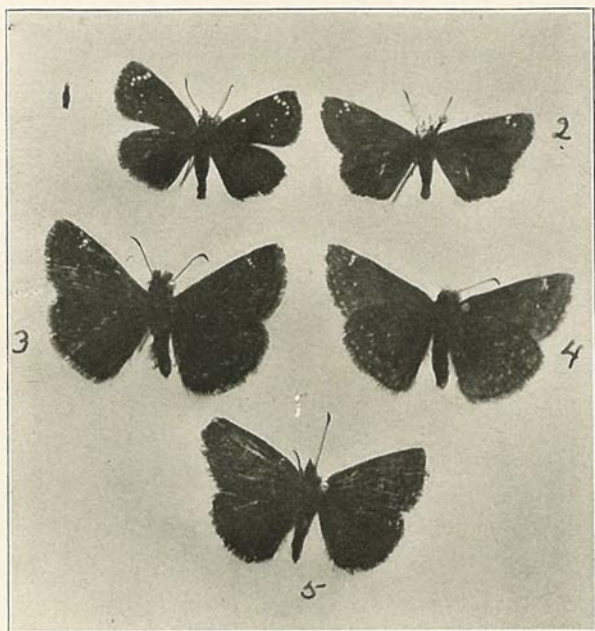
Fig. 107. *Pholisora catullus*, slightly enlarged.

**Butterfly**—Expanse, .80 to 1.15 inches. Brownish black on both sides of the wings, with a faint marginal series and a conspicuous submarginal series of light spots on the primaries. In the male on the upper side, and in addition to these, in the female, a faint marginal series on the secondaries. On the under side only the upper spots of the submarginal series of the primaries reappear. The body and head are black above, the head with three longitudinal white stripes, the ends of the palpi hairs the same color; the palpi and head white beneath, the body black. Fringes concolorous with the wings.

**Early Stages**—The larva feeds on *Monarda*, *Chenopodium*, *Ambrosia*, and others. It forms a case for itself by folding the leaf along the midrib and stitching the edge together with a few threads of silk. It lies concealed during the day and feeds at night.

**Distribution**—It is found over the whole of temperate North America. At Missoula, in the state, it has been taken abundantly. Wiley has in his collection one specimen taken June 7, 1891, another June, 1893, both from Miles City; Coubeaux calls it rather common around Big Sandy.

Brandegree has one specimen from Mt. Ascension, near Helena, June 29, 1902.



*Pholisora catullus*, 1, 2, upper and lower sides.  
*Thanaos persius*, 3, 5 upper side, 4 under side.





Genus *THANAOS*, Boisduval.

**Butterfly**—Antennae have a moderately large club, curved, bluntly pointed. The palpi are porrect, the third joint almost concealed in the hair of second. All dark in color.

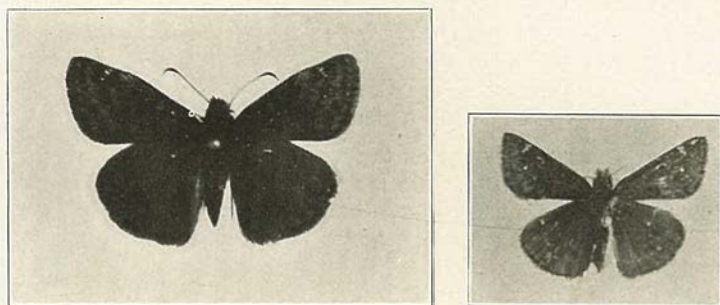
**PERSIUS' DUSKY-WING, *Thanaos persius*, Scudder.**

Fig. 108. *Thanaos persius*, from Helena. Fig. 109. *Thanaos persius*.

**Butterfly**—Expanse, 1.2 to 1.4 inches, 30 to 35 mm. Upper surface dark brown with a row of small white spots before the apex of the forewings, and a single one posterior to these. On the fore wings there is a transverse pale band just beyond the middle of the wings, but this band is not as well defined as in *T. lucilius*, which is found in the eastern part of the United States. Hind wings more of a reddish brown than the fore wings, with two rows of indistinct ochraceous spots near the outer margin, and a spot at the end of the cell in typical specimens.

Underside of the females grayish brown, the apical portion of the fore wings gray; the white hyaline spots are repeated, and both wings have two marginal rows of whitish spots. The males are darker than the females.

The species is subject to great variation, some specimens being light and others dark in color. Holland says "There is scarcely any positive clue to the specific identity of the insect except that which is derived from the study of the genital armature of the male, which is a microscopic research capable of being performed only by an expert in such matters."

**Early Stages**—The caterpillar feeds on willow and poplar.

**Distribution**—From New England across to the Pacific, southward as well. In the state it has been taken by Elrod at Missoula and in the Mission Mountains; by Douglas and Smith at New Chicago; by Cooley at Bozeman, by Brandegee at Helena, and by Coubeaux at Big Sandy.



AFRANIUS' DUSKY-WING, *Thanaos afranius*, Lintner.Fig. 110. *Thanaos afranius*.

**Butterfly**—The hind wings on the upper side in the male are almost solid black, the fringes paler. On the underside there is a double row of light spots along the margin of the hind wing in both sexes. On the upper side the female is generally lighter in color than the male.

**Early Stages**—Unknown.

**Distribution**—Common in Arizona. Given in Dyar's list. We have not taken it. One specimen from Bozeman, one from Helena, and one from unknown locality we have referred to this species.

**Subfamily PAMPHILINAE.**

In this subfamily is included the greater number of our smaller skippers; however, some of the species are larger in size than many of the Hesperinae. All of our tawny skippers belong to this subfamily, as well as some black or dark-brown species. The antennae usually have a stout club, with a short recurved tip; sometimes this tip is wanting. Fig. 112 shows plainly the venation. In the majority of our species the males can be recognized by the brand; this is a conspicuous dark patch crossing the disk of the fore wings obliquely. This brand is a complicated organ, composed of tubular scales, the *androconia*, that are the outlets of scent glands, and of other scales of various shapes; the brand is wanting in some species.

The *Pamphilinae* are difficult to study, owing to the slight differences in allied species. Either sex, moreover, resembles the same sex of other species much more closely than it does the opposite sex of the same species; and the difficulty is further augmented from the fact that in several species there are two distinct forms of females which differ from each other more than either does from the females of certain other species. These species have three forms, one male and two female.

**Key to Genera.**

- |   |                 |
|---|-----------------|
| 1. Antennae with the point of the club absent; end obtuse                     | 2.              |
| Antennae with the point of the club present; end sharp                        | 4.              |
| 2. Fore wings of male with a linear stigma.                                   |                 |
| Fore wings of male without a linear stigma                                    | 3.              |
| 3 Under surface of hind wings with silvery white spots                        | <i>Pamphila</i> |
| Under surface of hind wings without silvery white spots                       | <i>Oarisma</i>  |
| 4. Antennae with the point of the club short, less than width of club         | 5.              |
| Antennae with point of club long, equal to or greater than the middle of club | 9.              |

- |   |             |
|---|-------------|
| 5. Antennae in length twice the width of thorax | 6           |
| Antennae short, equal to the width of thorax.   |             |
| 6. Male stigma with modified scales below       | 7.          |
| Male stigma without modified scales below       | Ochlodes    |
| 7. Stigma apparently continuous                 | 8.          |
| 8. A small black area below stigma              | Thymelicus  |
| An obscure, weak fulvous area below stigma      | Erynnis     |
| 9. Mid tibiae with long distinct spines         |             |
| Mid tibiae not, or very feebly spined           | 10.         |
| 10. Male with a stigma                          | Limochroes. |

Genus **PAMPHILA**, Fabricius.THE ARCTIC SKIPPER, *Pamphila palaemon*, Pallas. Fig. 111.Fig. 111. *Pamphila palaemon*.

**Butterfly**—Expanse, 1.10 inches, 27 mm. This butterfly is wholly unlike any other species, and is easily recognized from other skippers of our fauna. The figure shows the markings. The upper side of the wings is dark brown conspicuously marked with yellow spots. The fore wings of the male lack the brand; the spots on the lower side of the hind wings are silvery white.

**Early Stages**—The caterpillar feeds on grasses.

**Distribution**—The insect ranges from southern Labrador as far south as the White Mountains and the Adirondacks, thence westward, following a line north of the Great Lakes to Vancouver's Island and Alaska. It ranges southward along the summits of the mountains as far as Southern California. Taken in the state by Cooley near Bozeman. One taken at Flathead lake.

Genus **OARISMA**, Scudder.THE POWESHEIK SKIPPER, *Oarisma powesheik*.Fig. 111A. *Oarisma powesheik*.



**Butterfly**—Expanse, 1.2 inches, 30 mm. The club of the antennae lacks the terminal hook. The upper surface of both fore and hind wings is dark brown; the costal margin of the fore wings to near the apex is dull yellow; the fore wings of the male lack the brand. On the under side the fore wings are black, edged on the costa and outer margin for a short distance below the apex with light fulvous. The veins and nervules of the hind wings are white, standing forth conspicuously upon the darker ground color.

**Early Stages**—Unknown.

**Distribution**—It occurs in Illinois, Iowa, Nebraska, Dakota, and Montana. In the state it has been collected by Coubeaux near Big Sandy, 1904; by Cooley at Bozeman, July 18, 1901, and by Wiley at Miles City (7), three July 4, 1892, two June 2, 1893, and two June 17, 1899.

**THE GARITA SKIPPER**, *Oarisma garita*, Reakirt, may be expected in Montana. It is light fulvous on the upper side, with the costa of the hind wing somewhat broadly marked with leaden gray; on the under side the fore wings are brighter fulvous, with the inner margin lined with dark gray. The hind wings are paler fulvous, inclining to gray, with the inner margin bright fulvous. Expanse, .75 to 1.00 inch, 19 to 25 mm.

#### Genus ERYNNIS, Schrank.

**Butterfly**—The antennae are short, less than half the length of the costa; the club is robust, with a terminal crook. There is a discal stigma on the fore wings of the male. The egg is somewhat spherical. The caterpillar feeds upon grasses. The chrysalis is elongated and cylindrical.

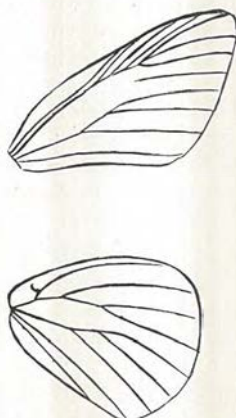


Fig. 112. Venation of Erynnis.

**THE UNKAS SKIPPER**, *erynnis unkas*, Edwards. Figs. 113, 114.

**Butterfly**—Expanse, 1.35 to 1.6 inches, 34 to 40 mm.

**Female**—Upper surface fuscous, the base and posterior part of the fore wings, and a broad band through the hind wings from the base out, washed with dusky fulvous. The fore wings have a sub-terminal broken row of spots, all whitish but the last, which is yellowish, also a small spot at the end of the cell; the two between the branches of the median

vein with the outer angles much extended. Hind wings with the sub-terminal spots of the under side showing through a little.

Under side fuscous gray, sprinkled with pale yellow scales. The spots on the upper surface of the fore wings are repeated, white in color, those of the sub-terminal row blended into three groups, the lower widen-

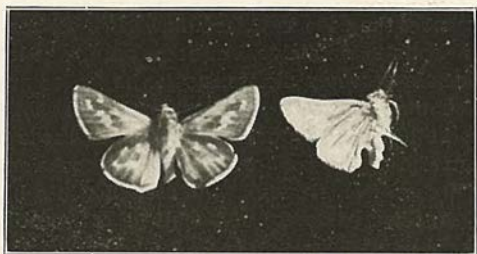


Fig. 113. *Erynnis uncas*.

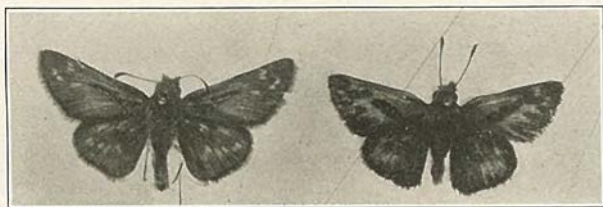


Fig. 114. *Erynnis uncas*.

ened posteriorly, so as to suffuse most of the posterior angle area. The hind wings have two very much bent white bands, the outer not reaching the inner margin.

Male—Upper surface fulvous, the hinder portion washed with yellow, a row of five yellow spots in the outer fulvous field. Stigma very oblique, narrow, jet-black, contracted in the middle.

Hind wings washed with yellow, inclining to fulvous in the central part; fringes white, fuscous at base. Under side as in the female.

On the under side of this species the wings are beautifully marked, the spots reappearing from the upper as pearly white ones on greenish gray brown.

**Early Stages**—These are unknown.

**Distribution**—It ranges from Delaware westward to Colorado and Montana. In the state it has been taken by Elrod at McDonald Lake in the Mission Mountains (1), at Missoula (2), at the Biological Station at Flathead Lake abundantly, and also in the Park at Mid-geyser basin (2). Cooley has collected it at several places in the vicinity of Bozeman. Allen has collected in at Dillon.

#### THE COMMA SKIPPER, *Erynnis comma*, Linnaeus.

**Butterfly**—The following is taken from Scudder's description of *Pamphila nevada*, which Dyar gives a synonym for *colorado*, which is the form taken in Montana.



"The males differ from all the other species of this genus in the clearness of the upper surface of the wings; occasionally the wings are somewhat suffused with dusky, but usually the hind wings have but a narrow edging of blackish, broadened, naturally, along the costal border; and the fore wings, instead of having a distinctly limited bordering, as is common to a greater or less extent in most species, have the wing gradually more and more suffused with a warm bud dusky tint toward the tip, as is not unfrequently the case in *P. comma*. Sometimes the mesial belt of the under surface is visible above, but occasionally, at least, it is wholly absent. The female scarcely differs, upon the upper surface, from the females of *P. comma*, except in almost uniformly having the small subapical spots, both those near the costal, and those near the outer border, paler than the others, or nearly white, as occasionally happens in the females of *P. comma*. Beneath, the mesial white band of the hind wings is more irregular and scattered than in *P. comma*. In the male it is usually broken up into four patches, connected, by their angles only, into a continuous angular belt; three of these patches, of nearly equal size, but the middle one usually the largest, lie in a straight line parallel to the longer axis of the wing, situated one each in the subcostal and subcosto median interspaces, as far from the outer border as the second patch; the medio-submedian spot further removed from the border than the rest; the ground color of the wing is a greenish griseous, and the spots are narrowly edged exteriorly and interiorly with blackish. The markings of the female are similar, excepting that they are usually a little larger and more obviously continuous, often sending out on the exterior border little shoots of white along the nervules."

This species with its many varieties is found in Europe, America and Asia. In the Canadian Entomologist of 1883, Vol. XV, is an interesting discussion by Dr. A. Speyer and W. H. Edwards relative to the comparison of specimens from different localities.

There are the following varieties recognized in Dyar's list, Bulletin 52, U. S. Nat. Mus.; *oregonia*, *columbia*, *colorado*, *idaho*, *nevada*, *assiniboia*, *laurentina*, *manitoboides*, *juba*, *viridis*, *manitoba*. In his later revision of the group, Journal N. Y. Entomological Society, September, 1905, he thinks three or four names will suffice. *Laurentina* Lyman, *colorado* Scudder equals *manitoba* Scudder equals *nevada* Scudder, *columbia* Scudder, *idaho* Edwards equals *assiniboia* Lyman he refers to the synonym of *comma*.

The varieties are distinguished about as follows:

Hind wings below dark brown, spots moderate	<i>laurentina</i>
Hind wings below green, spots often reduced	<i>colorado</i>
Hind wings below grayish green, the spots often small and tending to form a straight row; smaller than the other forms	<i>columbia</i>
Hind wings below light yellow or greenish	<i>idaho</i>

**Distribution**—This is a European species, found in Northern United States, the Pacific States, and in the Rocky Mountain States. Dr. Coes collected the variety *colorado* along the northern border in 1874. It has been taken by Barnes at Aldridge, and by Brandegee at Helena.



**THE PAWNEE SKIPPER, *Erynnis pawnee*, Dodge.**

Male expanse, 1.45 inches, 36 mm. Primaries above fulvous. Subcostal, submedian and subdorsal veins black at the base. Stigma black and conspicuous, followed by a dusky shade. A small black line at the extremity of the disk is preceded by a yellowish white or semi-transparent spot in the disk; a similar spot, triangular in shape, appears between the first and second median veinlets at their divarication, and two others between the sixth and seventh subcostal veinlets. The outer margin is broadly bordered with brown, which is finely powdered with fulvous scales toward the apex.

Two nearly square fulvous spots between the last subcostal and first median veinlets, separate an oval brown patch that lies at the extremity of the disk, from the border. Costal edge blackish. Fringe white, dusky toward the apex.

Secondaries fulvous, bordered with brown; broadly and darkest along the anterior edge, narrowly on the outer edge, where it appears as cuneiform spots between the veinlets, and broadly along the inner edge, where it is sprinkled with fulvous. Most of the veins on both wings are black. Underside of both wings yellow. Primaries black at base, having a black line corresponding to the stigma.

Inner margin brown, preceded by a large whitish patch. Five pale whitish spots near the apex, another in the disk, and one between the first and second median veinlets. Fringe white at the anal angle, brown tipped with white at the apex. Secondaries have a whitish spot in the disk, and are crossed by a nearly straight row of small whitish spots. Head and thorax greenish yellow. Body black. Abdomen, breast and palpi yellowish white. Antennae black and yellow above, white tipped with chestnut below. The spots on the under side of secondaries sometimes obsolete.

Female, light brown above, with a slight purplish reflection. Primaries sprinkled with fulvous scales near the base and inner edge. There is a large, square, white spot in the disk, and an unequal, curved row of nine white spots extend from the costa—beginning about two-tenths of an inch from the apex—to the submedian vein. The first three spots are narrow and equal, the fourth and fifth are small and square and lie nearest the outer edge of the wing, the sixth is large and triangular, the seventh largest and square, the eighth and ninth are irregular in shape and partly fulvous.

Secondaries darkest along the anterior margin. A curved row of five whitish yellow spots, of which the second and third are longest, crosses the wing beyond the disk, and in the disk is a small yellow spot. A yellow streak precedes the last median veinlet, run to the outer margin. Fringe of all the wings white. Below, on the primaries, the same white spots appear as above, except that the eighth and ninth are merged in a large whitish patch, situated as in the male. A brown patch covers part of the base and inner margin, and extends to the center of the wing. On the secondaries three small white spots appear near the apex. The ground color of both wings is yellowish white, most deeply tinged with fulvous near the costal border of the primaries. Fringes white. Head,



thorax and body brown above. Abdomen and palpi white. Antennae black above, whitish tipped with red below. This species was taken at Glencoe, Nebraska, upon high rolling prairie, from the first to the middle of September.

The above is the original description, copied from Canadian Entomologist, Vol. VI, No. 3.

**Distribution**—The Western plains, Utah and Nebraska,, according to Dyar. Given in "List of Butterflies taken by H. K. Morrison in Dakota and Montana, 1881," in Canadian Entomologist, Vol. XIV, 1882. We cannot tell from this list whether it was taken on the plains of Dakota or Montana.

**THE WOODLAND SKIPPER, *Thymelicus sylvanoides*, Boisduval.**

**Butterfly**—Expanse, 1.25 to 1.34 inches, 31 to 34 mm.

Male, upper side fulvous, darker at outer edge; a black stigma, large; several (three) light spots near outer angle, beyond stigma. Female, upper side with less fulvous, the wings prevalently fuscus, and the red color reduced to a spot at the end of the cell; a median band of fulvous spots on both wings. On the under side in both sexes the wings are quite pale gray, with the costa near the base and the cell of the primaries reddish. The primaries at the base near the inner margin are black. The spots on the under side reappear, but are pale and faint. This is to be expected in the state, but we have not seen the species among the collections.

**Early Stages**—Unknown.

**Distribution**—The species ranges along the Pacific coast from British Columbia to California, and eastward to Colorado.

**Genus *OCHLODES*, Scudder.**

**THE INDIAN SKIPPER, *Ochlodes sassacus* Harris. Fig. 115.**

**Butterfly**—Expanse, 1.2 to 1.4 inches, 30 to 35 mm.

Male—Upper surface fulvous, dark brown or black through the discal cell and along the border, the base dusky. A black, oblique stigma or sex-mark below the cell.

Under side pale fulvous, the posterior part fuscus; the five sub-terminal spots of the upper surface repeated, a spot at the end of the cell, a large triangular patch, with dentate outline, all yellowish white. The hind wings have a sub-terminal band of six whitish spots across the anterior two-third of the wing, and a spot at the end of the cell.



Fig. 115. *Ochlodes sassacus*, female on left, male on right.



Fig. 116. *Ochloedes sassacus*, upper and lower surfaces of male.

**Female**—This is larger, the fulvous ground color paler, the outer marginal shades darker, and the discal stigma is replaced by a dark brown shade. The fore wings have a row of eight yellow spots, and two elongate spots, more or less distinct, in the outer part of the cell.

On the under side the spots of the fore wings are repeated, pale, the lower of the outer row broadly expanded.

Body brown above, with grayish hairs, lighter beneath.

**Early Stages**—The caterpillar feeds on grasses.

**Distribution**—From New England to Florida, westward to Colorado and Montana. In Montana collected by Elrod at Missoula (9), at McDonald Lake in the Mission Mountains (3), and in numbers of the University of Montana biological Station. Douglas and Smith collected it at Wiles Hot Springs (14).

#### Genus LIMOCHROES, Scudder.

The antennae are about half as long as the costa; the club is robust, elongate, with a very short terminal crook; the palpi have the third joint erect, short, bluntly conical. The male has a linear discal stigma on the upper side of the fore wing. The egg is hemispherical, somewhat flattened on the top. The larvae feed on grasses, and construct a tube-like nest of delicate films of silk between the blades.

#### THE CROSS-LINE SKIPPER, *Limochroes manataqua*, Scudder.

**Butterfly**—Expanse, 1.00 to 1.20 inches, 25 to 33 mm.

In the male the wings are dark brown marked and tinged with yellow; the brand is very slender and nearly straight; outside of it there is a patch of brown scales, which makes it appear wider than it is; between the brand and the costal margin the wing is heavily covered with yellow scales, and the transverse row of spots beyond the middle of the wing is more or less distinct; the hind wings are tinged with yellow, sometimes the transverse row of spots is faintly indicated.

In the female the wings are dark brown above with a transverse row of whitish spots beyond the middle of the fore wing; hind wings without spots.

**Distribution**—The species is reported to have a general distribution over the United States. It has been collected by Cooley at Bozeman.





Fig. 117. Old cabin at Swan Lake, where *Vanessa j. album*, the Compton tortoise shell butterfly, was taken in great numbers.

List of Species of Butterflies Collected by Campbell Carrington and  
William B. Logan, of the Expedition, in 1871.

By W. H. Edwards.

- Papilio rutulus*, Boisduval.—Junction.  
*turnus*, Linn.—Montana.  
*Parnassius smintheus*, Doubleday.—Junction; Yellowstone.  
*clodius*, Menetus.—Montana.  
*Pieris protodice*, Bois. (Printed *Pinis protodin*).—Several localities.  
*Anthocaris ausanoides*, Bois.—Hot Springs.  
*Colias eurytheme* (printed *enegthenu*), Bois.—Hot Springs.  
*philodice* (printed *philodin*), Godart.—Hot Springs.  
*alexandra*, Edwards.—Yellowstone.  
*astraea*, Edwards.—Colorado.  
*Argynnis edwardsii*, Reakirt.—Junction.  
*montivaga*, Behr.—Junction.  
*meadii*, Edwards.—Colorado.  
*myrina*, Cramer.—Colorado.  
*Melieta* (spelled *Meletaeta*) *hofmanii*, Beahr.—Junction.  
*Phyciodes tharos*, Boisd.  
*Grapta satyrus*, Edwards.—Hot Springs.  
*Pyrameis huntera* Drury.—Montana.  
*Vanessa antiopa*, Linn.—Montana.  
*milberti* (spelled *melbertii*), Godart.—Bozeman City.  
*Coenonympha ochracea*, Edwards.—Virginia City.  
*Erebia rhodia*, Edwards.—Yellowstone.  
*haydenii*, Edwards, new species.—Yellowstone.  
*Satyrus nephele*, Kirby.—Yellowstone.  
*silvestris*, Edwards.—Virginia City.  
*sthenele*, Bois.—Virginia City.  
*Chrysophanus rubidus*, Edwards.—Stinking Creek, (Mont).  
*Lycaena anna*, Edwards.—Pleasant Valley.  
*acmon*, Bois.—Meadow River. (Mont.)  
*Pyrgus syrichtus*, Fab.—Montana.  
*Herpena comma*, Linn.—Virginia City.

In addition to the above were several specimens, especially of *Lycaenidae*, that were too much injured for recognition.

W. H. EDWARDS,

Coalburgh, West Virginia.

January, 1872.

**EREBIA HAYDENII**, Edwards, New species.

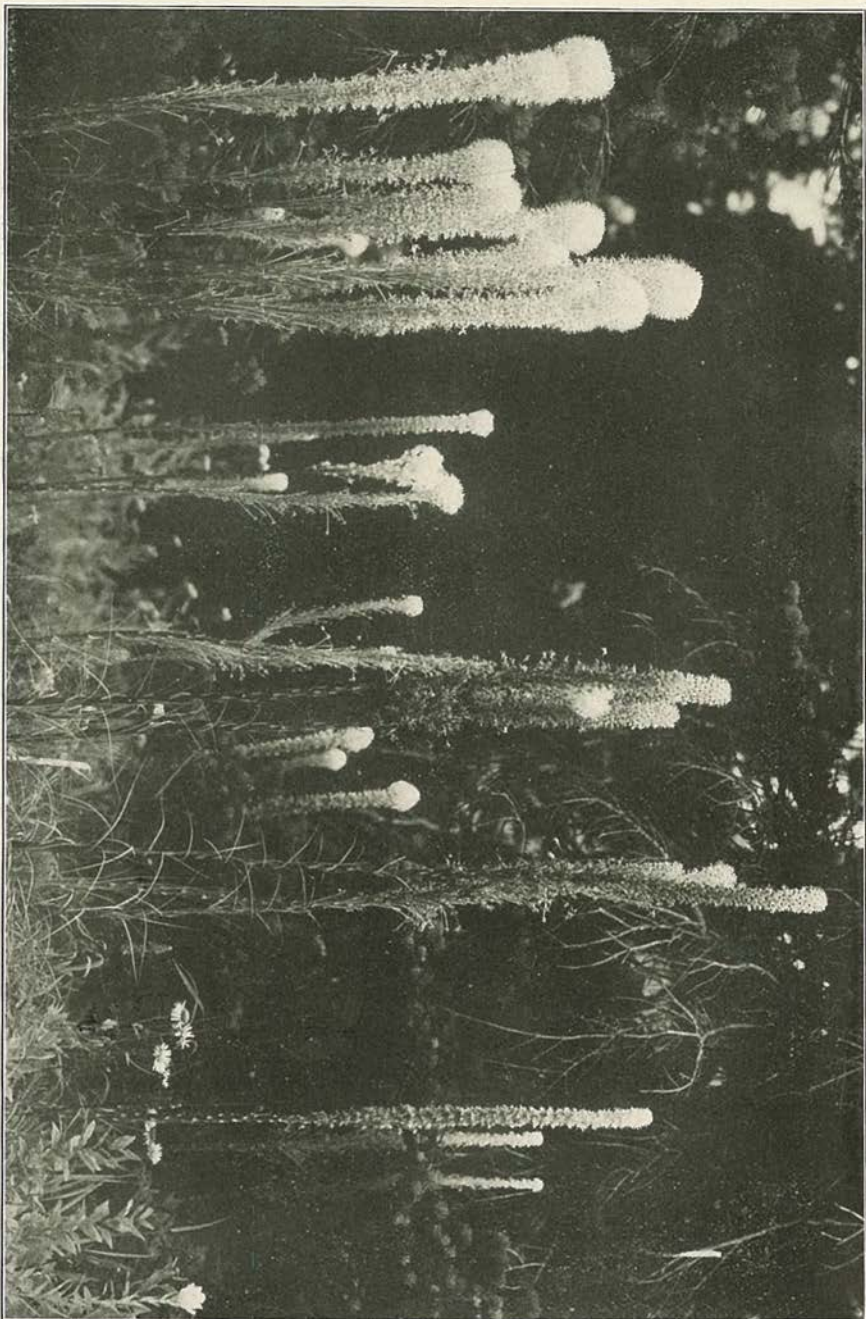
Male: expanse, 1.6 inches.

Upper side fuscous, immaculate; under side a shade paler, much irrogated with gray scales; primaries immaculate; secondaries have a complete series of black ocelli along the edge of hind margin, one on



each interspace; each ocellus narrowly ringed with ochraceous, and having minute white pupil.

The above is copied from "Preliminary Report of the United States Geological Survey of Montana and Portions of Adjacent Territories: Being a Fifth Annual Report of Progress. By F. V. Hayden." This is the report for 1871, printed in 1872.



Xerophyllum and other flowers at 6,500 feet elevation on MacDougal Peak in the Swan Range. Around such flower beds as these butterflies are always in abundance on sunny days. Indeed, around such places is really the only





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## Glossary.

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- Abbreviated, as applied in Biology, shorter than the ordinary type.
- Abdomen, the posterior part of the body.
- Aborted, imperfectly developed; rudimentary.
- Aciculate, needle-shaped, more slender than subulate.
- Acuminate, terminating in a long tapering point.
- Albino, an animal or plant exhibiting an abnormal deficiency of coloring matter.
- Alpine, as applied in Biology, inhabiting a mountain region above the limits of forest growth.
- Anal, pertaining to the posterior part of the body.
- Anal angle, the inner or posterior angle of the hind wings, next to the body.
- Angulate, having angles.
- Annulate, furnished with colored rings.
- Antennae, two articulated organs of sensation, situated on the head.
- Anterior margin, the front margin of the wing; the costa.
- Apex, that part of the wing which is farther from the body; the angle between the costa and the outer margin.
- Ashen or ashy, ash-colored.
- Aureus, golden yellow.
- Basal, relating to the base.
- Base, as applied to a wing, that part which is joined to the body.
- Bifid, cleft.
- Bipillate, applied to an ocellate spot having two pupils or dots within it of a different color from the rest of the spot.
- Body, the three parts of an insect, head, thorax, abdomen.
- Boreal, pertaining to the north.
- Bronze, the color of old brass.
- Buff, a brownish-yellow color.
- Capillary, hair-like; long and slender, like a hair.
- Carinate, keeled; having a longitudinal prominence like the keel of a boat.
- Caterpillar, the larva.
- Caudate, tailed:—generally applied to the posterior wings of Lepidoptera to indicate tail-like projections.
- Cell, usually in Lepidoptera the space between the subcostal and median veins; the discal cell.
- Chitine, the hard part on the outside of insects.
- Chrysalis, the third stage of the insect, counting the egg one.
- Ciliate, fringed.
- Clavate, club-shaped.
- Coalesce, to grow together or unite.
- Collar, scales back of the head, forming more or less of a ring; the neck.



- Concolorous, of the same color, as the body agreeing in color with the wings.
- Confluent, running into each other.
- Coniferous, cone-bearing.
- Connivent, conveying or approaching.
- Conoidal, tending to a conical form.
- Contiguous, touching; placed so near as a touch.
- Convergent, approaching each other towards the tip.
- Cordate, heart-shaped.
- Corrugated, wrinkled.
- Costa, the thickened anterior part of the wing from the base to the apex.
- Cremaster, the anal hooks of the chrysalis, which fasten into silk to hold the chrysalis in place.
- Crenate, scalloped.
- Cretaceous, chalky.
- Cruciferous, pertaining to the Cruciferae or mustard family of plants.
- Cubitus, the second longitudinal vein of the fore wing.
- Cuneiform, wedge, shaped.
- Cupreous, coppery; the color of copper.
- Dentate, toothed.
- Diaphanous, semi-transparent, clear.
- Dichotomous, forked; dividing by pairs.
- Diffuse, spreading.
- Dimorphous, two-formed:—applied to a species existing in two forms having different colors or markings.
- Discoidal, disk-shaped.
- Disk, the surface within the margin,—usually between the end of the cell and the outer margin.
- Diurnal, as applied to Lepidoptera, active during the day.
- Divergent, tending in different directions.
- Dorsal, of the back.
- Dorsum, the back or upper surface.
- Echinate, set with prickles.
- Edematous, dull translucent white.
- Edge, the margin.
- Egg, the first stage of an insect.
- Ellipsoid, pertaining to a solid every plane of which is an ellipse or circle.
- Elliptical, in the form an ellipse.
- Emarginate, notched.
- Entire, the margin smooth, or without teeth.
- Entomology, the branch of zoology that treats of insects.
- Epysillate, applied to an ocellate spot included in a colored ring, but destitute of a pupil or central dot.
- Excision, a cutting off or out.
- Eyes, the organs of sight, composed of numerous hexagonal facets.
- Fasciated, banded.
- Fauna, the animal distribution of an era, or of a stated period.
- Fawn-color, light yellowish brown.
- Ferruginous, of the color of iron-rust.

- Filiform, thread-shaped.
- Foveae, shallow rounded depressions or pits.
- Frontal, pertaining or relating to the front.
- Fuliginous, sooty; soot-colored.
- Fulvous, orange-yellow.
- Fuscous, dark brown with slight mixture of gray.
- Fusiform, spindle-shaped.
- Geminate, situated in pairs.
- Gemmate having buds.
- Generic, pertaining to a genus.
- Genus, an assemblage of species which correspond in particular characters
- Globular, like a round ball.
- Glutinous, slimy, viscid.
- Granulated, covered with small grains.
- Gregarious, living in society, or many feeding together.
- Habital, a situation or locality frequented by insects.
- Head, the anterior part of the body.
- Hibernaculum, a case of web and leaves in which larvae or pupae hibernate, or a cocoon of silk.
- Hibernation, to pass through or survive the winter.
- Hind margin, that part of the fore wings which is included between the base and the posterior angle.
- Hirsute, rough with strong hairs.
- Hoary, covered with a fine white silvery substance or pubescence.
- Humeral, the vein in the humerus.
- Humerus, the anterior base of the wing.
- Hyaline, transparent; vitreous.
- Hybrid, an animal or plant produced from the mixture of different breeds, species or genera.
- Imago, the perfect or adult insect.
- Imbricated, tiled; placed one over another, like shingles on the roof of a house.
- Immaculate, without spots.
- Incanous, hoary.
- Inconspicuous, not readily discernible.
- Inner margin, that margin of the hind wings which extends from the base to the anal angle; by some authors used to denote the posterior or hind margin of the fore wings.
- Inscriptions, markings.
- Involute, coiled specially as certain antennae.
- Iridescence, a many colored appearance.
- Iris, of an ocellate wing spot, is a circle that surrounds the principal spot.
- Irrorate, sprinkled.
- Joints or Articulations, the divisions of the body or segments of the larva; the divisions of the pupa, more particularly the abdomen; the divisions of the antennae.
- Labial palpi, articulated filaments, one on each side of the labium.
- Labium, the lower tip.



Labrum, the upper tip.

Lanceolate, lance or spear shaped.

Larva, the second stage of an insect, counting the egg the first.

Lateral, situated on the side.

Laved or washed, covered with scales of a color different from the ground color, but not quite obscuring the latter.

Lenticular, lens-shaped.

Lepidoptera, an order of insects having four wings covered with minute imbricated scales; butterflies and moths.

Lethargic, becoming torpid or inactive.

Linear, narrow and of nearly uniform width.

Lineated, streaked or marked with lines.

Livid, dark gray, verging towards violet.

Longitudinal, the direction of the longest diameter.

Lunate, crescent-shaped; formed like a new moon.

Lunule, a crescent-shaped marking.

Lurid, of a dirty brown color.

Lustrous, shining.

Maculate, or maculated, spotted.

Mandibles, the upper jaws.

Margin, the edge of wing, or along the edge.

Maxillae, the lower jaws, placed between the upper jaws and the lower lip.

Median, middle.

Mesial, middle, as a band or stripes across the middle portion of the wing.

Mesothorax, that division of the thorax to which the middle pair of legs are attached.

Metamorphoses, transformations.  
are attached.

Moult, or Molt, shedding or casting off the larva skin.

Nebulous, clouded.

Nervule, a small nerve or nervure.

Nervures, divisions of the nerves or veins of a wing.

Neuration, or Venation, the arrangement of the veins of the wings.

Niger, black a little tinged with gray.

Obconic, inversely conic.

Obcordate, inversely heart-shaped.

Oblong, the transverse diameter much shorter than the longitudinal.

Obviate, inversely egg-shaped.

Obsolescent, growing obsolete.

Obsolete, indistinct.

Occiput, the hinder part of the head.

Ocelli, eye-like spots on the wings of Lepidoptera; single eyes of insects.

Ochreous, yellow with a slight tinge of brown.

Olivaceous, olive-green.

Opaque, having no luster, dull.

Orbicular, round.

Order, the subdivision of a class.

Oval, broadly elliptical.

Ovate, egg-shaped.

Overlaid, heavily sprinkled with scales of a different color from the ground color; clouded; overcast.

Palpi, in butterflies, the three jointed organs beneath the head between which the tongue is coiled like a watch-spring.

Perianth, as applied in Botany are the floral leaves that inclose the young sporophylls.

Petiole, of a leaf, the stalk-like portion that bears the blade.

Piceous, pitchy; the color of pitch.

Pika, a tailless hare found in the Rocky Mountains.

Pile, very minute, short hairs.

Pileated, crested; cap-shaped.

Pilous, having long, sparse hairs.

Polymorphous, applied to a species existing in several different forms as to color, markings, or size.

Porrect, straight out.

Posterior angle, the angle formed by the outer margin and the posterior or hind margin of the fore wing.

Posterior margin, that portion of the fore wings which is opposite the costa.

Postmedia vein, a vein lying between the media and cubitus.

Premedia vein, a vein lying between the media and radia.

Primaries, the fore wings of Lepidoptera.

Proboscis, the tongue or sucking organ.

Pronotum, the anterior part of the covering of the thorax, the covering of the thorax.

Prothorax, the first division of the thorax, to which the first pair of legs are attached.

Protuberant, bulging.

Pruinous, hoary; covered with a whitish powder.

Pubescent, coated with fine hair or down.

Punctured, marked with small impressed dots.

Pupa, the third stage of an insect, country the egg the first; the chrysalis.

Pupate, to assume the pupa form.

Pupil, of an ocellus, the central point.

Quadrangular, having four angles.

Quadrangle, square, or nearly square.

Radius, a vein of the wing; the subcostal.

Remote, separate; not near together.

Reniform, kidney-shaped.

Reticulate, resembling net-work.

Retractile, capable of being exerted or drawn in at pleasure.

Retuse, ending in an obtuse sinus.

Ribs, ridges on eggs from the base to the apex.

Roseate, of a rose color.

Rosevs, rose color.

Rufous, reddish.

Rugose or Rugous, wrinkled.

Russet, reddish or yellowish brown.



- Sagittate, arrow-shaped.
- Sanguineous, of the color of arterial blood.
- Scabrous, rough, with projecting points.
- Scales, the dust or imbricated pieces covering the wings.
- Secondaries, the hind wings of Lepidoptera.
- Segment, a ring or division of the body.
- Sericeous, silky.
- Serrate, saw-toothed.
- Sessile, connected with the part to which it is attached without the intervention of a peduncle or stalk.
- Seta, a bristle.
- Sinuate, indented.
- Sinuous, curving, winding or folding.
- Sinus, an indentation of execution.
- Sparse, scattered.
- Species, an assemblage of individuals possessed of permanent characteristics of size, color, and ornamentation, by which they may be distinguished from other forms, and which breed true to their type.
- Spinous, armed with spines.
- Spiracle, breathing-holes on the side of the body; the stigmata.
- Sporophylls, as applied to Botany, leaves which produce only spores.
- Spinkled, marked with thinly-scattered scales of another color than the ground color.
- Stigmata (singular Stigma), the breathing-holes on the sides of the body; also, sometimes, spots on a wing.
- Stigmated, resembling stigmata.
- Striae, lines; transverse elevated lines on eggs.
- Striate, marked with lines.
- Stridulator, a locust, grasshopper, or other insect that makes a musical or shrill sound by rubbing together specially hardened parts of the body.
- Subapical, situated below the apex.
- Subcosta, the subcostal vein, situated behind and near the costal vein of an insects wing.
- Submarginal, applied to a space or line within the margin.
- Subocellate, applied to an ocellus without a pupil.
- Suffused, blurred with a color other than the usual one.
- Sulphureous, bright yellow; the color of sulphur.
- Tail, the terminal segment of the abdomen; an appendage at the posterior part of the hind wings.
- Tarsi, the feet.
- Tawny, dull yellowish brown.
- Terminal, at the extremity
- Testaceous, tile or brick color.
- Thorax, that part of the body which is back of the head.
- Tibia, that part of the leg which is next to the foot.
- Tippet, one or two scale-like appendages of the pronotum of Lepidoptera.
- Tongue, the sucking-tube of Lepidoptera.
- Tosidity, a lethargic state of hibernation.
- Translucent, semi-transparent.

Transverse, crosswise.

Trochanter, an appendage at the base of the thigh.

Trophi, the mouth parts.

Truncate, cut square off.

Tubercle, a small swelling or prominence.

Undulating, vibrating; wavy.

Umbel, as applied to Botany, a flower-cluster in which a number of the same length spring from the same point, thus radiating like the stays of an umbrella.

Variation, a deviation in function or structure from the usual form, but not breeding true to type.

Veins and Venules, the frame work of the wings.

Venation, see venation.

Venter, the lower part of the body.

Ventricose, distended.

Verticillated, arranged in a circle around an axis.

Villi, soft hairs.

Violaceous, violet color.

Vitellinus, yellow with a slight tinge of red.

Vita, a longitudinal colored line.

Washed, see laved.





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## ERRATA.

- Page 3, seventh line from the bottom, read *edwarosii* for *edwardsi*.  
Page 5, sixth line from bottom, read *Lycaena* for *lycana*.  
Page 14, for Fig. 13, read Fig. 14.  
Page 15, for Fig. 14, read Fig. 13.  
Page 66, eleventh line from the bottom, read *zolicaon* for *zolicoan*.  
Page 97, third line from top, for Branedgee read Brandegge.  
Page 111, seventh line from bottom, for *Spiraca* read *Spiraea*.  
Page 112, tenth line from bottom, for *Lycaona* read *Lycaena*.  
Page 112, twenty-third line from bottom for *Basilachia* read *Basilarchia*.  
Page 112, fifth line from bottom, for *sminthcus* read *smintheus*.  
Page 140, first line of fourth stanza, for whitness read whiteness.  
Page 143. In the key, after *Hesperopsis* read P. 147; after *Scelothrix* read P. 145; after *Heliopetes* read P. 147; after *Pyrgus* read P. 147; after *Pholisora* read P. 148; after *Thanaos* read P. 149.  
Page 151. In the key, after *Ochlodes* read P. 156; after *Thymelicus* read P. 156; after *Erynnis* read P. 152; after *Limochroes* read P. 157.  
Page 156. After THE WOODLAND SKIPPER read *Thymelicus*.  
Page 159. Seventh generic name from top, read *Melitaea* for *Melieta*.









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