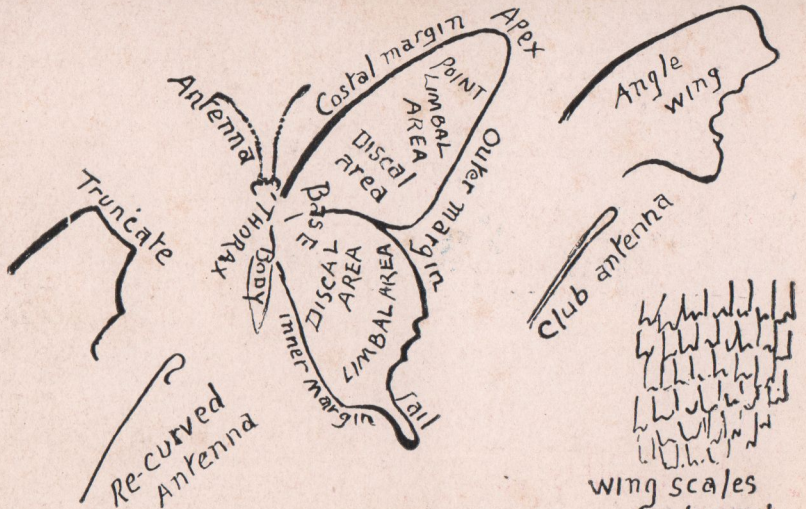

BUTTERFLIES
of America
64
COLOR ILLUSTRATIONS



BUTTERFLIES AND MOTHS OF AMERICA

by

LILLIAN DAVIDS FAZZINI

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PREFACE

The study of butterflies and moths is a pastime that soon becomes a hobby with most of us;—a sunny spring or summer day spent in woods and fields studying and classifying these interesting insects will be but a beginning—for you will certainly repeat such a trip and soon will be able to identify and name many of the butterflies and moths that you will see all around you. It is surprising how many of them we pass unnoticed until our interest is aroused—and that is the purpose of this little book, to arouse your interest and be of real service in helping you know by sight a few of the many species to be found in this country. And remember, after you have become familiar with the butterflies and moths of that part of the country in which you live, there is always the thrill to be gained by finding a "stray"—a Columbus of the insect world, that has become bold enough to venture far from its native haunts.

It has been repeatedly said that there are over six hundred and fifty species of butterflies and about two thousand moths liberally scattered over the United States.

Often as small a thing as this book will arouse such interest in a subject as to open a door of real pleasure:—at the age of seven the writer watched a mantis cleverly stalk and catch a fly—that was the beginning of much time spent in woods and fields studying wild life of every description; it is hoped you too, will derive keen enjoyment in gaining field-knowledge of our lepidoptera, (a word derived from the Greek, and meaning scale-wing—or wings); and that is just what butterflies and moths are, their wings are covered with minute scales overlapping, and must be handled with extreme care as these scales are easily dislodged.

SPANGLED FRITILLARY

Argynnis Cybele (Fabr.)

The Fritillaries are called Silver Spots; silvery triangles, and patches mark the under side of the hind wings.

The Great Spangled Fritillary has twenty-four or twenty-five such spots on each hind wing and is one of the largest of this tribe with a wing expanse of from three to four inches.

It has a wide range throughout the United States.

In the North and West it is single brooded; in the South it is double brooded.

The egg is conoidal, broad at the base, depressed at the top, with eighteen longitudinal ridges, nine reaching the top.

It is amber colored, and is found upon leaves of the violet, the food plant of the caterpillar, which is velvety black with six rows of black spines, reddish-yellow at the base.

The chrysalis varies in color from glossy brown mottled with orange-red to brown mottled with gray or light brown.

The butterflies appear in June and July.

The Great Spangled Fritillary

THE REGAL FRITILLARY

Arginnis idlia (Dru.)

One of the most beautiful of all the Fritillaries—and there are many varieties of this attractive tribe—is the Regal Fritillary, a large showy butterfly with deep, rich coloring and a wing expanse of from three to four inches, the female being considerably larger than the male.

In the northern portion of its range, there is only one brood in a season, but in the southern part there are two broods. Caterpillars that are hatched later in the season hibernate, eating nothing during the cold winter months and feeding for several weeks in the spring before changing to chrysalids.

Each stage of development from egg to butterfly is unusually long. The eggs are laid on the underside of violet leaves, upon which the caterpillars feed at night. During the daytime they remain motionless and well hidden under the leaves. These eggs are well rounded at the sides, depressed at the summit, and have eighteen vertical ribs; they hatch in about three weeks.

The newly-hatched caterpillars are pale yellowish-brown with blackish-brown spots, and there are a few curved black hairs distributed thinly over the body, which tapers toward the ends.

These caterpillars moult five times before reaching maturity and show a decided change in form and color each time they cast their skins. After the fourth moult they are buff colored, but after their fifth and last, they are velvety black, with stripes of dull yellow that change to dull red-orange. There are six rows of tapering spines, each of which have several black bristles; two of the rows on the back are silvery-white and are black tipped; the rows on the sides are a little smaller and are orange or yellow at the base. The head is reddish on the upper side and black on the under side.

The caterpillar is now full grown and is about one and one half inches in length, the color is brownish-tan with small brown and black patch-spots sprinkled over it.

The Regal Fritillary flies from June to September. The underside of the hind wings is marked with silver spots and patches. Marking and coloring of the male and female are the same except that the black marginal band of the fore wing of the female is narrower, and the two rows of spots on the hind wing are tan-white. Its range is from Maine to West Virginia and westward to Nebraska and Arkansas. The one shown in the drawing was captured in Connecticut, flying over swamp milkweed and was the only Regal Fritillary the writer saw the entire season!

This butterfly feeds upon the nectar of Joe-Pye-weed, boneset, golden-rod, pig-weed, and swamp milk-weed, but the eggs are nearly always laid upon the underside of violet leaves.

The Regal Fritillary

THE DIANA FRITILLARY

Arginnis Diana (Cram.)

THE Diana is one of the largest of the Fritillaries and differs from all others of this tribe in the fact that the female is utterly unlike the male both in marking and coloring.

The wings of the male are a rich shade of velvety brown bordered by a very wide band of ochre-orange, crenate next to the brown, and having two rows of circular brown spots, the row near the margin being quite small; the veins are outlined with brown and there is a brown line at the margin. The body is brown and the thorax downy.

The underside has the silver crescents and triangular spots so characteristic of the Fritillaries. The upper surface of the wings of the female is rich blue-black or greenish-black, the outer third being slightly paler, and containing three rows of bluish-white square edged spots, the marginal rows being almost white.

There are three rows of bright blue elongated spots containing circular spots of black, and a marginal row of dashes of very pale blue-white, the underside of the wings is somewhat like those of the male.

The eggs are a pale greenish-white, conoidal, depressed at the top and have about eighteen prominent, wavy ridges; they are laid upon violet leaves—which is the food plant—or grass that grows near. The larva is about two inches in length and is velvety black, with six rows of long spines from which grow black bristles; these spines are orange-red at the base. The head is dull brown.

It remains quietly resting in the daytime, usually under leaves, and feeds chiefly at night or very early morning. The chrysalis is cylindrical with small elevations on the front part and a depression on the back, the head is forked.

It is ochre-brown in color marked with several shades of darker brown. This species has one brood each season.

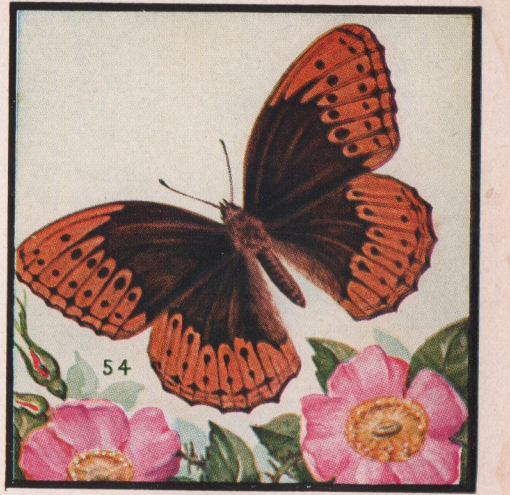
The Diana Fritillary has a wing expanse of three and a quarter to four inches, and appears in summer, having spent the winter and spring months in the chrysalis.

The males seem to precede the females, as they are seen shortly before their blue-black mates appear.

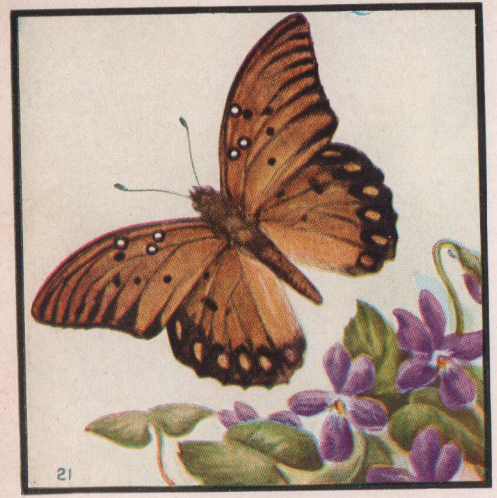
They are found upon blooms of the golden-rod, Joe-Pye weed, boneset, butterfly root, and milk-weed, but seek the violet leaves when it is time to deposit their eggs.

These butterflies are usually seen flying around swampy lands. They have a wide range which extends from Virginia and West Virginia to Northern Florida, Southern Ohio to Illinois, Missouri, Tennessee, Kentucky, Arkansas, and occasionally in Indiana.

There are numerous varieties of Fritillaries; in fact many of our midsummer butterflies are members of this family.



The Diana Fritillary



Gulf Fritillary

GULF FRITILLARY

Dione Vanille (Linn.)

THE Gulf Fritillary is a red-brown butterfly with black spots and markings; there are three white-centered black dots near the costal margin of the fore wings; the hind wings have a black border containing six light spots. The under side of the wings is spotted with silver and is very beautiful. The wings have an expanse of from two and a half to three and a half inches.

This butterfly shows great fondness for the foliage of the Passion Flower vine and deposits its eggs on the foliage of this plant. These eggs hatch in about two weeks; the caterpillars are brownish yellow with dark brown horizontal stripes and black branching spines. This is a short-lived butterfly, and there are numerous broods in a season.

The range of the Gulf Fritillary is the entire southern portion of the United States from the Atlantic to the Pacific, and as far north as Virginia and Illinois.

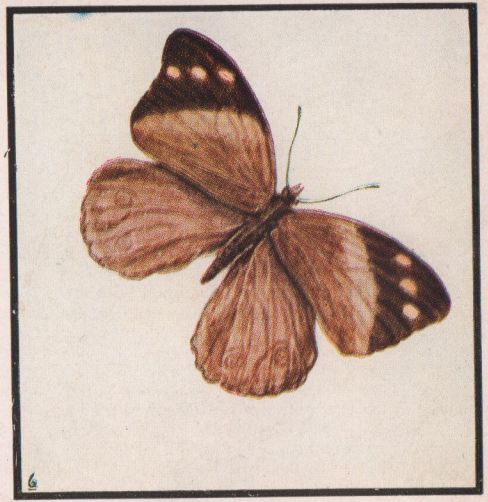
KARWINSKIS' BEAUTY

Smyrna Kawinskii (Huber)

THERE are two species of this genus, and they resemble each other closely; the one pictured came over our borders by way of Texas, and it is now so well known to collectors that we can hardly pass it by, for it has established itself as a permanent part of our butterfly life.

Its range is widening, but it will never venture very far northward. The other species is easily recognized, as the hind wings show tail-like angles;— and it does not occur within our boundaries.

The coloring of male and female varies in the Karwinskis' Beauty, being a darker tone, in the female. Fore wings have dark brown apex tip with an outlining bar of yellow extending from the costal margin to the outer margin. There are three yellow spots on the dark end of fore wing near apex. Hind wings plain. Seeks shelter at night under leaves of trees or bushes, where it remains with wings closed, motionless.



Karwinskis' Beauty

RED SPOTTED PURPLE

Basilarchia Astyanax (Fabr.)

THIS shimmering purplish-black butterfly belongs to the tribe of the Sovereigns; its range is wide, covering the United States in general from the Atlantic states westward to the Rockies; it is most frequently seen in the Eastern states, Mississippi Valley, and Kansas, where it is double brooded.

It gets its name of The Red Spotted Purple from the few conspicuous red spots on the under side of the hind wings which are brown with a submarginal row of red spots, two at the base of the fore wing and four at the base of the hind wing.

The eggs are small and are deposited singly on the points of the leaves of the food plants; when first laid they are yellowish-green but turn brown when about to hatch.

The caterpillars are brownish, slightly variegated with white and cream color on the sides, greenish-gray on the back; on the second segment are two long, slender, brown horns which are thickly barbed. On the fifth segment and along the back are dorsal prominences, giving these caterpillars an odd appearance. When ful grown they are about an inch and a quarter in length.

They feed upon the leaves of oak birch, willow, currant, apple, cherry, plum hawthorn, gooseberry, and many othe trees and shrubs. I have found that in captivity they will devour almost any kind of leaf offered them.

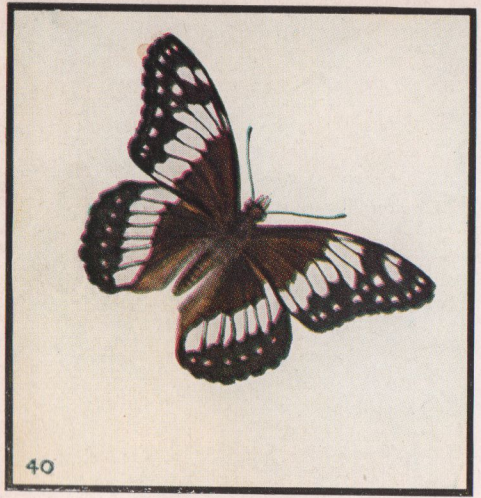
They do not devour the midrib of the leaf they are feeding upon, using it as a resting place. They fasten bits of chewed leaf together with a silk web, and attach this irregular packet to the midrib by strands of silk.

When they have completed the second moult, each begins to construct a tube-like shelter to be used as winter quarters. They eat away the point of a leaf, cutting it off in a straight line, leaving the mid-rib untouched; the leaf is securely fastened to the twig with silk so it can not fall or be blown off; then the leaf is rolled to form a tube by drawing the edges together and fastening them with silk web. It is then lined with web and in this snug hide-away the caterpillar spends the winter months.

The following spring the caterpillars leave these retreats and feed on the new leaves until they have completed their development. They then form their chrysalids which are fully as curiously humped as the caterpillars are and marked with similar colors—brown, greenish-gray, deep cream color and white.

The butterflies emerge in about eleven days, their richly-colored purple-black wings—which show a slight iridescence in sun light—have an expanse of from three to three and a half inches. Near the outer edge of both wings are violet-blue and black markings, and a series of white crescents along the outer margin.

Red Spotted Purple



Wedemyer's Admiral

WEIDEMEYER'S ADMIRAL

Basilarchia Weidemeyeri (Edwards)

THIS western butterfly is one of the White Admirals; there are a number of species of this genus (Basilarchia) found in the United States.

The Weidemeyer's Admiral is found from Montana to New Mexico and westward including the entire Pacific Slope.

The yellowish-green eggs are deposited on leaves of the cottonwood, oak and other trees. They are placed singly at the point of each chosen leaf. The caterpillar begins eating the leaves, at the extreme point and decorates the mid-ribs with bits of leaf fastened with strands of silk. In late autumn it constructs a tubular retreat where it spends the winter. This shelter is formed by eating away the point of the leaf, leaving only the mid-rib; it is then rolled and lined with heavy silk, the mid-rib hanging in front of the entrance like a tiny flag. There are two broods each season. This butterfly has a wing spread of three inches.

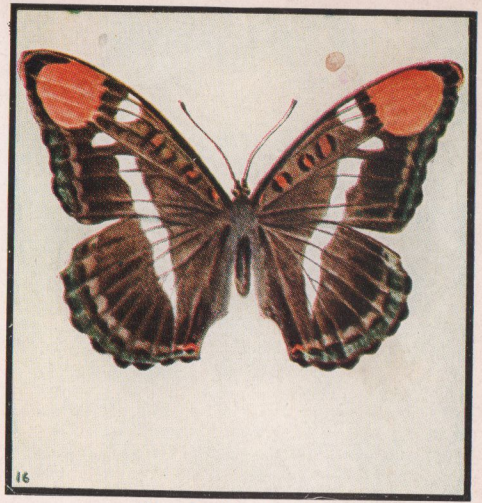
THE CALIFORNIA SISTER

Adelpha Californica (Butler)
Heterochroa bredowi

THE California Sister is exceedingly showy and one of our most distinctive and easily recognized butterflies.

It is strictly a southwestern butterfly, belonging to the Pacific Coast, where it is common in some portions of California and can also be found in Arizona and in some sections of the Rocky Mountains, especially the sunny slopes of the southern portion. It is found less plentifully in Nevada and southern Utah.

The California Sister has a wing expanse from two to three inches. It is velvety blackish-brown—some specimens being darker than others—there is a broad white transverse band across each wing, interrupted toward the apex of the fore wings—tapering to a point on the hind wings. There is a large reddish-orange patch at the apex of each of the fore wings. The caterpillar feeds upon the young leaves of the oak trees.



The California Sister

THE THISTLE BUTTERFLY

Pyrameis Cardui (Linn.)

THIS attractive butterfly, *Pyrameis Cardui*, has two everyday names, being commonly known as the Thistle butterfly and the Painted Lady. It ranges the entire United States; in fact, it is thought to be the most widely distributed of all the butterflies, being found in nearly every country of the world. Wherever the thistle grows in profusion you can expect to find this butterfly flying about, for this is the favorite food plant of its larva which also feeds upon nettles, althea, marshmallows, burdock, hollyhocks, and sunflowers.

There are two broods each year and it hibernates in the butterfly state. In the Northern states it spends the coldest months well hidden in hollow trees, under loose bark or some unknown sheltered spot that offers protection from the weather.

If you wish to know just how well it succeeds in finding well concealed spots, take a trip to a wooded section and try to find the hiding place of at least one of these dormant butterflies—if you do find one, you will be a far more successful hunter than the writer; but they are there, all around you, as the first real warm and sunny days of late spring will prove.

There are several species of *Pyrameis* which closely resemble the *Pyrameis Cardui*, and although each of these has a wide range, the *Pyrameis Cardui*—which is shown in the drawing—is the most widely distributed and the best known. The small, greenish eggs are laid upon the leaves of the food plants—the thistle and burdock being the oftenest chosen. These eggs hatch in about one week.

The caterpillar is about an inch and a quarter in length when fully grown; it is a pale yellowish-gray with faint lilac tints and yellow and white lines. There

are seven rows of tubercles from which grow branching spines of whitish yellow with the tips of the branches black. There are a few small black spots over the body, and the head is black.

It spins a thin webby shelter composed of the surface of a leaf chewed to form a small enclosure where the young caterpillar stays when not feeding.

When this first home is outgrown the fast-growing caterpillar constructs a larger, more substantial hide-away by drawing together the edges of a leaf and webbing it to form a tent-like shelter. When the caterpillar is a little more than half grown, this is replaced by a third nest which is much larger and better made, being well lined with web, and water proof. It forms a light brownish-gray chrysalis from which the butterfly emerges in about ten days. Like so many other varieties of butterflies, it is usually seen flying in pairs.

It is a swift, strong flyer and covers long distances, often flying in swarms.

The Thistle Butterfly

THE RED ADMIRAL—NETTLE BUTTERFLY

Venessa atalanta (Linn.)

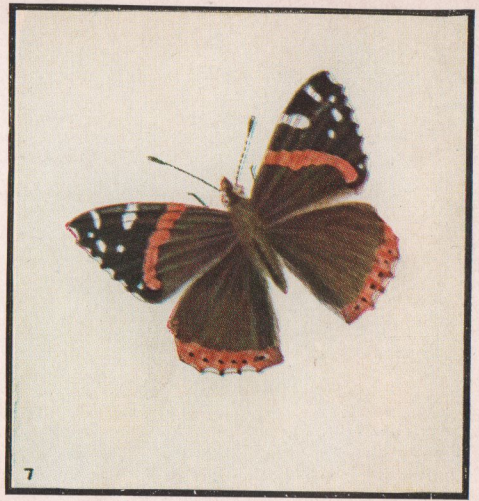
THE familiar Red Admiral is considered by many to be one of our most attractive butterflies. It is certainly one of the best known throughout the United States. Its velvety black wings with their vivid orange-red bands and white markings, make it one of the brightest spots in our fields and gardens, when contrasted with the fresh green foliage of the springtime.

It is also one of the most difficult to capture—it alights a few feet from you apparently utterly unconscious of your presence, its wings opening and closing rapidly, in a manner no other species of butterfly can quite achieve. But it is well aware that it is being pursued and it eludes capture cleverly, by abruptly flying just a few inches beyond reach.

The eggs are barrel shaped, green, with nine vertical ribs. Caterpillars when hatched are greenish-brown, with ten rows of black, curved hairs. In reaching maturity these caterpillars cast their skins four times, each moulting bringing change in form and color. The eggs are laid in late May and early June on leaves of hop-vine or the nettle; this insect's fondness for the nettle has caused it to be called in some sections of the country, the Nettle Butterfly. The eggs are deposited a few on each leaf, and hatch in about one week. The newly-hatched caterpillars crawl to the top of the plant, where each make a nest by attaching together the edges of an unopened leaf, forming a protection against weather and birds. About a week later they cast their skins and each crawl to another leaf and this time they each construct a form of tent by eating away the base of the leaf until it droops over and can be webbed together. After each moult a new tent is made. Eggs that are laid in May become butterflies in July, these butterflies lay eggs that develop into the second brood, that hatch in the latter

part of August or early September although some of the second brood remain in the chrysalids all winter, coming forth as butterflies in early spring. A few live through the winter as adult butterflies and the long, cold months leave them frayed and faded when spring days come, a contrast to those that are newly hatched.

The upper surface of the wings are brownish black; the fore wings are crossed by orange-red bands and the tips of the wings are blue black with white spots. The hind wings are brownish black bordered with orange-red, containing a row of black spots. The wing expanse is about three inches.



The Red Admiral Nettle Butterfly

MONARCH BUTTERFLY

Anosia plexippus

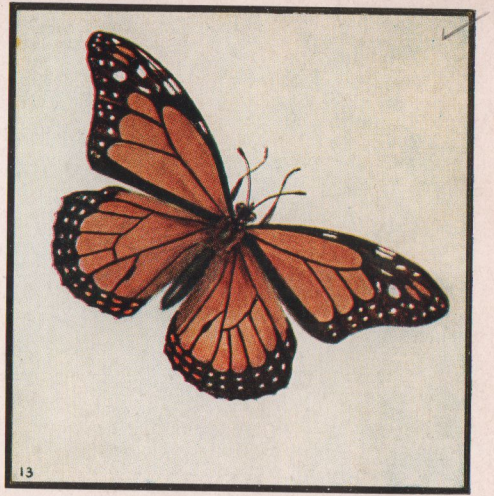
ENTOMOLOGICAL literature records many flights of butterflies over long distances, for instance the migration from one country to another far remote. In the United States there are butterflies that, like the birds, make long migratory flights, although this fact is not generally known to those who have not made a study of the subject. The well-known Monarch butterfly makes regular annual migratory flights, covering many miles traveling from the Canadian border southward as far as the Gulf States in the autumn, remaining there or going to Florida and Texas, and returning north in the early spring. The Monarch does not flutter its wings when in flight,—after a few strong, full wing strokes, it glides gracefully for a long distance, and it has the power to regulate its speed,—when on protracted flights it "sails" very rapidly. The Monarchs gather together in large swarms just before starting on the long flight southward. Hundreds gather on a chosen tree, and after the start is made, they are joined by others as they are on the wing. The return is made more or less individually—small groups starting off and scattering after a few hours. From June until October this beautiful and distinctive butterfly can be seen in nearly every field and garden, throughout the entire country, particularly in sections where the milkweed grows. The Monarch is also called the Milkweed Butterfly.

The pale green eggs are laid on the leaves of the Milkweed in spring and early summer. They soon hatch into small black and white caterpillars, and when fully grown, are the familiar Milkweed Caterpillar, about two inches long, with a yellow head marked by two triangular stripes of black. The body is marked with narrow transverse stripes of yellow, orange, white and black. They are adorned

with four long shaking black horns—or filaments. They soon form a chrysalis of great beauty; smooth light green, dotted with brillant gold. The butterflies emerge in about two weeks, a truly beautiful insect with a wing expanse of about four inches. The Monarch butterflies are never pursued by birds or other enemies, because of their acrid blood which makes them highly distasteful to every type of insect-eating creature. And the Monarchs are well aware of this protection, for they show no fear of birds that alight within a few feet of them.

The small elongated black spots on the hind wings of the male, are scent pockets, not a protective odor, but like many other butterflies, they seem to consider it attractive to the females.

These butterflies show less fear of mankind than other species, and will alight near you in field or garden, and it is a common sight to see them hovering about flowers growing in window boxes. They are easily captured without the use of a net.



Monarch Butterfly

THE VICEROY

Basilarchia archippus (Cram.)

THE Viceroy in every stage of its development is one of the most interesting of butterflies, and a striking example of so-called protective imitation, for it mimics the well known Monarch (*Anosia plexippus*) to perfection, except in size, the Viceroy being the smaller, and you will notice the narrow black band across the hind wing of the Viceroy which is missing in the marking of the Monarch.

The Monarch is a very distasteful mouthful to birds and other insect eaters because of its acrid taste, and so flies freely about fields and gardens, seeming to sense this protection.

The Viceroy is unusually tasteful, but because of its striking resemblance to the Monarch it too, is let severely alone.

It flies freely from spring until autumn over the entire United States; it is common in all sections except the North Pacific coast, where it is less plentiful.

The eggs are laid on the tips of the underside of the leaves of the food plants, and often only one to a bush. To protect them, these eggs are covered with minute hairs, but even so, many of them are found to be parasitized, which is the fate of a large percentage of the eggs of all moths and butterflies. The eggs hatch in about eight or nine days. Each small caterpillar at once devours the remainder of its egg shell; and then begins feeding on the leaf it is on, eating the edge, leaving the midrib untouched, upon the underside of which it remains motionless when not feeding. It feeds chiefly at night. It moults in about a week, and devours its cast-off skin. It moults several times before it is full grown and it is then about one and a quarter inches in length, unusual in shape and color. The body is thickly covered with granulations, and is mottled in shades of olive-green, light-brown, buff and grayish-white.

There is a pair of prickly, cylindrical, black horns on the third joint. There are two broods each season; the caterpillars of the first brood do not build shelters as those of the second do. They eat the point of the leaf, leaving the midrib untouched. Then the leaf is rolled, fastened securely with silk and then lined with silken web; the stem of the leaf is covered with silk and securely fastened to the twig, so that it can not fall or be blown off. In this tube-like retreat the caterpillar rests when not feeding, and in this weather-proof shelter it spends the winter. Both broods have a curious habit of constructing a small, ragged packet of bits of chewed leaves, loosely fastened to the midrib; this is about the size of a pea, and it moves with every breeze. It may be done to distract attention from the caterpillar that is feeding near by. The chrysalis is marked with brown, light-gray, pinkish-buff and white; it is angular, and has more or less prominent projections. Food leaves are: willow, which seems to be the favorite—poplar, cottonwood, and aspen.

The Viceroy

TIGER SWALLOW-TAIL

Papilio Turunus

We have heard much about a national flower—why not a national butterfly? If such a campaign was started and several of our well-known butterflies that have a range of the entire United States were chosen as candidates, the Tiger Swallow-tail would certainly be among the number and would get many—if not the most—votes, for it is so well known throughout the land—country, city, wooded area, mountain and plain—everywhere this bit of flying sunshine can be seen. But do not get the impression that the Tiger Swallow-tail is readily captured!

There are several varieties of yellow swallow-tail butterflies; the entomologists find a great difference between them, but to the casual observer they are all alike—a large yellow butterfly with a wing expanse of four to five inches and tiger-like black markings. The eggs are deposited upon the leaves of orchard and wild cherry trees and a great variety of other trees and plants. These eggs are green or bluish-green and some of them have tiny reddish spots; they are smooth and round, but are slightly flattened on the side that adheres to the leaf. The leaves of the wild cherry are favorite food-leaves of the newly hatched caterpillars, which are green, nearly the color of the leaves upon which they feed. The front part of the body is very large and has a double stripe of yellow and black across the back. There are two yellow-black and turquoise eye-spots in front of this stripe and rows of turquoise spots behind it.

When disturbed this caterpillar rolls its head under and throws up the front part of its body; this hides the real head and causes the large, fierce-looking eye-spots to seem like real eyes. It throws out its curious scent organ that looks like a forked tongue and the harmless caterpillar suddenly becomes a terrifying object, looking like the head of a snake

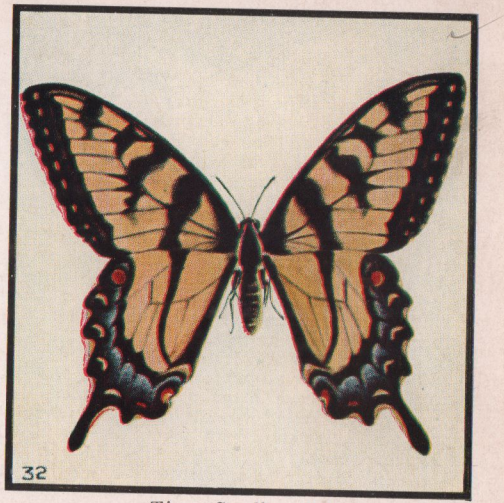
and this effect is heightened by a swaying motion of the front part of the body. Birds and other insect-eating enemies become frightened and lose no time in retreating from this fearsome-looking creature.

The scent organs exude a foul odor which is very distasteful to all of the many caterpillar eaters; the larvae of most of the Swallow-tail butterflies exude bad odors whenever disturbed.

They construct a very comfortable spring-bed by spinning a web across a leaf, fastening the strands of silk to the margin and drawing them just tight enough to cause the leaf to curve and make the web springy and upon this they rest when not feeding. The chrysalids are brown or greenish-brown and are held in place on the branch by a silk girdle.

The first brood come forth as butterflies in July and August, the second brood winter in the chrysalids.

Most of the females are the color of the males, the others being brownish-black.



Tiger Swallow-Tail

BLACK SWALLOW-TAIL

Papilio polyxenes (Fabr.)—Form Asterius (Cram.)

THIS is a particularly well-known butterfly, the *Papilio polyxenes*, is, like all of the papilios—one of the so-called swallow-tails and has a very wide range, being found in practically all parts of North America south of the Canadian border.

There are several forms showing a slight variation in size and the width of the yellow markings. The male is not quite as dark as the female—and the yellow marking is more pronounced.

They feed upon the nectar of a great variety of field and garden flowers, but the female always selects the food plants of the larva upon which to deposit the eggs, which are a pale yellow, small, smooth and round with the exception of a slightly flattened spot where they are attached to the leaf; they are laid one in a place on the leaves, and hatch in about ten days.

The larva is the well-known yellow dotted, green and black striped parsnip worm that is found feeding upon celery, parsley, parsnips, carrots, and many of the wild plants that belong to this order.

The full-grown caterpillars do not resemble those newly hatched, which are nearly black with two white bands, one across the middle and a narrower one on the hind part of the body, which is covered with small tubercles from which arise short bristles.

They moult four times, each time showing a decided change.

The fifth stage is the mature caterpillar which is about one and a half inches long, smooth, bright green with a transverse band of black on each segment; each of these bands contains a row of bright orange-yellow dots.

The scent organ is yellow; when disturbed these caterpillars thrust out from just back of the head these yellow horn-like organs which give off a disagreeable odor, which is a great protection from insect-eating enemies.

These caterpillars do not conceal themselves by keeping under the leaves when feeding, as so many other caterpillars do, for they seem to sense the protection their curious scent organs give them.

The chrysalids are about an inch and a quarter in length and vary in tint according to the color of the surface upon which they are formed; they are sometimes ash-gray, pale green, ochre-yellow or brownish-tan, and have two short ear-like projections above the head.

These chrysalids, like those of all the *papilios*, are attached at the tip by a button-like spot of silk, and are supported by a girdle of silk around the middle of the body.

There are two broods each season in the North and three in the South. The last brood spends the winter as a chrysalis.

The *Papilio polyxenes* has a wing expanse of from three to three and a half inches, and can be found from late spring to autumn.

Black Swallow-Tail

THE GIANT SWALLOW-TAIL

Papilio Cresphontes (Cram.)

THIS is one of the largest and showiest of the North American butterflies, with a wing expanse of about four to five inches.

It is admired by all nature lovers, except orange growers of our Southern states, where the caterpillars of the Giant Swallow-tail feed eagerly upon the leaves of the citrus fruit trees.

Throughout the so-called "Citrus Belt," this larva is commonly called the Orange Dog, and in some sections the Orange Puppies. Many methods have been tried in vain, to exterminate these troublesome and destructive caterpillars.

The butterfly deposits eggs singly near the end of a leaf or tender twig, preferably of citrus trees, but in Northern states they are deposited upon rue, prickly ash, hop trees, poplar, and other trees. These eggs are slightly flattened at the base, and are usually pale ochre but sometimes greenish or orange tinted. About one week later they hatch and the small dark brown caterpillars feed upon the leaf upon which they were hatched, remaining upon the underside when not feeding. They moult in a few days and a week or so later they again cast their skins, continuing to feed and moult for about a month, when they are full grown —about one and three quarters inches long. Up to this time they have eaten only the young, tender leaves, but now they devour the older leaves and twig-buds. These caterpillars have scent organs, which when the caterpillars are disturbed, protrude from just behind the head, giving forth a decidedly disagreeable odor which seems to protect them from being devoured by birds, and appearing to sense this protection they do not hide under the leaves, as other caterpillars do. In the Northern states this caterpillar is two brooded, but in the southern states there are several broods.

The caterpillar attaches itself to the bark of the trunk or branch of a tree and changes to a chrysalis which blends with the coloring of the bark to such a marked degree that it is difficult to distinguish. Their coloring varies, some are gray marked with darker gray and brown, others are pale green marked with gray and brown.

The butterfly comes from the chrysalis two weeks later, a beautiful insect; the upper side of the wings black, marked with two bands of deep yellow—under side of the wings yellow with two bands of black. The tails are quite long, expanding toward the tip, they are black, with a dash-spot of yellow near the end. The body is black on the upper side, and yellow on the sides and the under portion.

Against the dark glossy green of the citrus trees, the butterfly is exquisite. It is abundant throughout the Southern states and the Mississippi Valley region. It is steadily extending its northern range and is now found occasionally as far north as the region of the Great Lakes, and westward to Nevada.

The Giant Swallow-Tail

Blue Swallow-Tail

BLUE SWALLOW-TAIL

Papilio Philenor (Linn.)

THE Blue Swallow-tail is seen oftenest where Virginia Snake-root and Pipe vine grow—as the larva of this butterfly feeds chiefly upon these plants. It is called the Pipe-vine Butterfly.

Dutchman's Pipe, native of the Allegheny Mountain region, is grown as a decorative garden plant in many other sections and is a food plant for these caterpillars which are found in groups on the leaves of this plant during July and August.

The butterfly emerges from the chrysalis in about three weeks, and has a wing expanse of about four inches.

The fore wings are black—the hind wings of the male show beautiful green iridescence—the female greenish-blue.

Under surface of each hind wing has seven orange spots, some partially bordered with white. Its range includes Middle Atlantic States to California and southward to the Gulf of Mexico.

GREAT PURPLE HAIR-STREAK

Hecla Halesus (Cram.)
Atlids Halesus (Hbn.)

THE Great Purple Hair-Streak is not purple at all—but iridescent blue, with a blue-black body and orange abdomen, hind wings ending in two black tails.

It is the largest of the many species of Hair-Streaks found in North America—there being fifty, or more.

The Great Purple has a wing spread of from one and three quarters to two inches. They derive their name from the fact they have hair line streaks and dashes on the under side of the wings—often on the hind wings only.

The eggs are deposited upon oak trees; the larva is green, with nine oblique bands of blending green. They feed upon oak, and mistletoe.

The chrysalis is russet with brown markings. Its range includes Florida, the Gulf States, Illinois, Nebraska, Arizona, and California.

Great Purple Hair-Streak

THE QUESTION MARK

Grapta Interrogationis—Var. umbrosa (Litner)

GRAPTA INTERROGATIONIS is a species with two forms, the hibernating form being known as the *fabricili*, the other, the larger, as the *umbrosa*.

This is one of our commonest butterflies, it being abundant all over the United States with the exception of the Pacific coast, where there are several varieties of the genus *Grapta* so closely resembling this species that the superficial observer would hardly notice a difference.

In fact there are about a dozen species of this genus, which is confined strictly to the Northern temperate zone. The resemblances are very great, but there are differences, especially on the underside of the wings; there is also a variance in size, the *umbrosa* being the largest of them all. These butterflies are called the Angle-wings from the formation of the wings, the margins of which are notched and clipped in a series of irregular angles, the apex of the fore wings being truncate, (cut squarely off).

The underside of the wings mimics the bark of trees and russety-brown of dead leaves, many of them showing a pinkish tone; there is usually a silvery mark a little below the middle of the hind wing, sometimes this mark is in the form of a comma, a question mark, an inverted L, a semicolon, or a C.

The eggs are pale green, conoidal in form, flattened at the base. The sides are round, and there are eight or nine ribs that terminate at a flat spot at the top.

When first hatched, the caterpillars are pale yellow, lightly marked with brown; the head is black.

After the first moult there is a complete change in the coloring. They now are black sprinkled with specks, and there are short black spines distributed over the body. A few spines on the eighth and tenth segments are whitish. After the

fourth moult, the caterpillars are fully grown and vary in color, some being black speckled with dull yellow, some are gray-brown with reddish lines, but the majority are chestnut with longitudinal rows of yellow spots, spines reddish or yellowish, and head brown.

They feed upon elm, nettle, false nettle, basswood, and hops.

Upon reaching maturity, these caterpillars feed for about five or six days and then change to chrysalids which are one inch in length, varying in color from pale buff to brown. There are eight silvery spots on the back.

These butterflies can be seen all summer in gardens, meadows and woods flitting from flower to flower. They are also to be found around the maple trees that have been tapped for sugar-sap.

The eggs are always deposited upon the foliage of the food plants of the larvae.

This butterfly has a wing expanse of two and one half inches.

The Question Mark

THE COMPTON TORTOISE

Vanessa J-album (Boisduval) (Leconte)

THERE is a silver-white J (not always perfect) on the under side of the hind wings of this butterfly, which is also called *Grapta J-album* and *Eugonia J-album*.

Both wings are a dull yellowish-ochre with a rusty tone on the basal half, shading to rust-brown at the base. There are tawny orange mottlings near the apex of the fore wings, three large black patches and an irregular spot of white along the front margin and several irregular black spots near the middle. A row of black notched spots form a sub-marginal band followed by a broken line of black near the margin of the wings, which have the notched, irregular angles and square cut apex characteristic of the angle-wings.

This angularity of outline helps greatly to conceal this butterfly when it rests motionless on tree trunks with wings closed, the under side of both wings being shades of gray and browns that blend perfectly with the bark of a branch.

When disturbed it drops to the ground and remains motionless for a long time, seeming to be a piece of loose bark that has fallen.

The eggs are laid upon willow, elm and birch trees. The caterpillars feed in groups, they are about two inches in length when fully grown.

They are green and have line stripes of a lighter shade; they are thickly covered with small points and short spines.

The dorsal and subdorsal spines are a glossy black, reddish at the base and are long and branching.

The chrysalids are about one inch in length and are a delicate green with a faint net-work design and six bright gold spots on the back.

The butterflies emerge in less than two weeks, the first of them appearing in early July. All summer they fly about gardens and fields. They are seen less frequently during the latter part of August and September but they reappear in early October.

Many of them hibernate, finding shelter in hollow trees, under eaves and loose bark—any sheltered spot that offers protection during the winter months.

They reappear in early spring—March, if the days are warm and sunny. They feed upon the juices of willow catkins, sap of trees where they have been cut or broken, and the sugar pans in the maple sugar camps, until the early flowers bloom.

During the summer they feed on the nectar of many varieties of flowers and in late summer and early autumn—like numerous other varieties of butterflies—they can be found on over-ripe fruit under orchard trees.

Their range is the Northern portion of the United States; they are found as far north as Alaska and southward to Pennsylvania.

Wing expanse two and a half to three inches.

The Compton Tortoise

AMERICAN TORTOISE-SHELL

Vanessa Milberti

THIS butterfly is one of the Angle-wings, and like all of this tribe is very distinctive in outline and coloring. While it is one of the smallest of the Angle-wings, it is one of the best known throughout two-thirds of the United States, being found in al' but the most Southernly portion.

The eggs are laid in clusters on the nettle, which is the food plant of its larva; these eggs are ovoid, broad at the base, with longitudinal ridges which increase toward the apex.

When full grown the caterpillars are about one and a quarter inches in length. They are velvety black on the upper side of the body with very small white dots and fine, light-colored hairs which give them a decidedly grayish color. They have black, branching spines and there is a lateral line of dull greenish-yellow, and above this is a broken line of orange-yellow. The caterpillar's head is black with a sprinkling of minute white dots.

The chrysalis is slightly angular, with the frontal beaks short. It is a light golden-brown color and is less than an inch in length. It hangs perpendicularly from the surface to which it is attached by a tiny button-like spot of silk. The small projection at the anal extremity of the chrysalis, known technically as the cremaster, ends in microscopic hooks which attach the chrysalis to the silk-web button. Many other species of butterflies suspend their chrysalids in this manner.

The *Vanessa milberti* is also called Milbert's Tortoise-shell.

Its wings are a soft rich shade of brown with a wide yellow submarginal band on the fore and hind wings, shaded on the outer edge with orange-red. There is a tawny orange-red oblong spot on the fore wing near the middle of the front margin. This spot is divided by an irregularly shaped, elongated black spot.

On the fore wing the wide yellow band has a black spot on the costa, with a white spot on both sides of it.

The border is composed of two parts. The inner border is black and the outer one is brown, lighter at the margin and containing a row of small light brown spots; the basal portion of both wings is dark brown.

In Colorado is found a variety which has about half of the wide submarginal band pale buff color.

The shades of coloring of many varieties of butterflies differ according to the temperature of the section in which they are found. The size, too, of many butterflies varies according to the location in which they live, the temperature has much to do with this, also the type of food the butterfly can find.

The *Vanessa milberti* has a wing expanse of a little more than two inches. The wings have the notched outline characteristic of all the Angle-wings.

American Tortoise-Shell

The Snout Butterfly

THE SNOUT BUTTERFLY

Libythea bachmani (Kirtland)

THIS Butterfly has a wide range—being found throughout the Atlantic States, Mississippi Valley, Texas, and Arizona in wooded sections, near water.

It gets its name from its long palpi, which is three-quarters the length of the antenna. There are two species of Snout Butterflies in the United States—one of which is seldom seen except in the extreme southern portion of the Gulf States; while the *Libythae bachmani* is steadily increasing its already wide range.

The eggs are light green, marked by nineteen or twenty longitudinal ribs, crossed by corrugations. These are deposited on the Hackberry tree, and hatch in less than one week. The larva moults four times, with two days elapsing between each moult—it is dark green. The chrysalis is small, one-half inch in length, blue-green in color. The male has four legs fully developed, the female six.

THE ZEBRA BUTTERFLY

Heliconius Charitonius

THIS Butterfly is found in Florida, South Carolina and the Gulf States.

The size of this butterfly varies greatly, some of them have a wing expanse of fully four inches, while others have two-and-one-half to three-inch spread. The butterfly deposits its eggs—which are yellow and ridged—upon the leaves of the Passion flower vine. The caterpillars when first hatched are light brown with a reddish tinge. Their color changes to a greenish cream, they rapidly increase in size, and when full grown they measure about an inch in length. They are dull white, smooth, with rusty black or brown spots in transverse rows. They form chrysalids which are very irregular in shape with two appendages extending from the head; the Zebra butterfly has long narrow wings, upper surface blackish brown, fore and hind wings banded with yellow.

The Zebra Butterfly

THE MOURNING CLOAK

Camberwell Beauty
Aglais antiopa (Linn.)

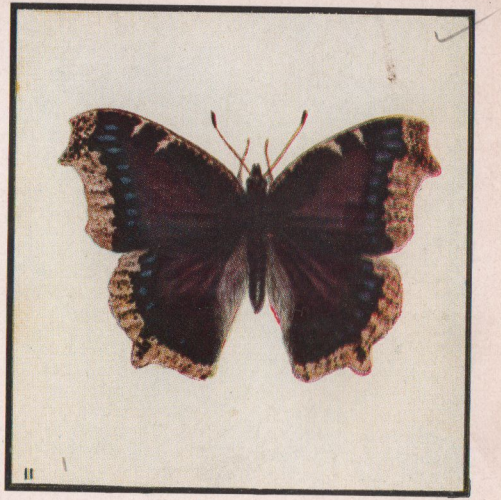
THIS familiar butterfly occurs everywhere in the North temperate zone. A beautiful purple-maroon brown—that takes on a brighter hue in the sunshine—with a border of light ochre yellow sprinkled with minute black spots—preceded by a black band containing a row of blue spots. The under side of the wings so closely resembles and thoroughly blends with the coloring of tree bark, that it is well concealed on a branch.

The name Mourning Cloak does not seem to be very appropriate for this richly-colored insect, its English name, Camberwell Beauty, appears to be more suitable, for this butterfly always seems to have an art of unhurried dignity. It is one of the largest of our butterflies that hibernates as an adult, having an expanse of from two to slightly more than three inches. During the winter months it hangs motionless from the branches of trees, under eaves of buildings, the under-side of fence rails, in hollow trees—in fact, in any well-protected spot, and can often be seen during the mild days of the mid-winter thaw seeking sunny sheltered spots. The eggs are laid late in spring, clusters encircling the small branches of the elm, willow, and poplar. These eggs hatch in about two weeks into small, almost black, caterpillars. As soon as hatched they range themselves, side by side upon the nearest leaves, eating the surface of each leaf, leaving the network of veins. The caterpillars remain side by side until the leaf they are feeding upon has been completely skeletonized, then crawl into procession to the next leaf, each caterpillar leaving a fine silky thread on the surface of leaves and twigs passed over. At the end of one

week they moult, and during the next three weeks the casting of their skins is repeated three times.

The caterpillars gain in size with each moulting; when fully grown they devour all but the mid-rib of the leaves. They show a marked preference for the elm and in some sections where these trees are plentiful, they are called Spiny Elm Caterpillars.

In Southern and Central New England this caterpillar is double brooded; the first brood appearing in July and the second in September. The chrysalis is gray-brown, varying in shade, the butterfly emerging in about two weeks. This is one of the few species of butterflies that remain quiet for hours at a time, hanging downward from twigs, wings closed, or basking in the warm sunshine, wings extended. The Mourning Cloaks subsist upon exuding tree sap, preferring maple, also the nectar secreted by blossoms of various plants, and they can be found in considerable numbers in orchards, eagerly sipping the juices of over-ripe fruit.



The Mourning Cloak

THE GOATWEED EMPEROR

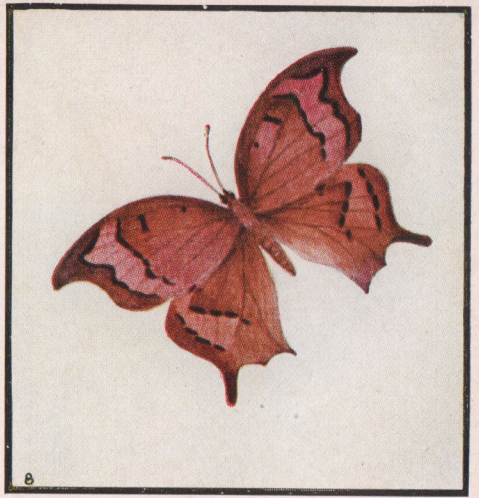
Anoea andria

THIS butterfly, the Goatweed Emperor, is abundant in localities where the goatweed grows—this being the food plant that the larva of this attractive insect thrives upon. This fact makes the valley of the Mississippi River a favorite breeding place for the Goatweed Emperor. Its range is from Illinois to Texas. This is another of our butterflies that hibernate; during the cold winter months they find shelter in hollow trees, under loose tree bark, in the crevices between logs and rocks, under eaves, and sometimes in hay lofts—in fact any place that offers protection from the storms and searching winds of the autumn and winter months. It seems unbelievable that collectors so seldom find these hide-aways, for they search diligently, knowing that many of these dormant butterflies are secreted near them—as the first warm, sunny days of spring time prove. From these hiding places they come forth in early spring.

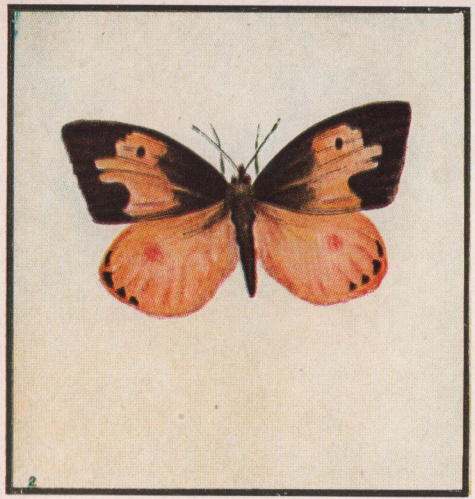
They may be seen upon the early springtime flowers—but when they are ready to lay their eggs they seek out the goatweed, and deposit the eggs singly on the leaves of the young goatweed plants. These eggs hatch within a week, and each of the small caterpillars feeds upon the leaf on which it was hatched, completely devouring it, leaving only the mid-rib, which it has thickly covered with a webbing of silk. Then the caterpillars crawl to other leaves, and each selects a good-sized leaf and forms it into a tube by rolling it and securing the opposite margins together, binding it securely with silk, and lining it with silk floss; thus forming a snug retreat which not only is a protection from the weather, but also conceals the caterpillar from its many enemies. The caterpillar leaves this shelter to go on foraging expeditions, returning when its appetite is satisfied or it has been disturbed. In a few weeks it is a full grown caterpillar of a grayish color and measuring about an inch and a half in length. It now forms a light green chrysalis, that is covered with whitish granules, from this unusual-looking chrysalis emerges the beautiful Goatweed Butterfly. It has a wing expanse of about three inches.

The upper side of both wings is a rich shade of burnt orange, the female having wide pale bands of a pinkish tinge, edged with brownish uneven markings, on both fore and hind wings. Males are solid color. The entire under surface of both wings is a light rusty brown color closely resembling a dead or dried leaf, and when the butterfly closes its wings, this leaf-like outline helps to carry out this illusion, which is a great protection from the sharp eyes of bird enemies—and numerous other insect eaters.

It is generally believed that in some sections there are two broods each season—while in other, colder regions, there is but one.



The Goatweed Emperor



The Dog Face Butterfly

THE DOG FACE BUTTERFLY

Meganostoma Caesonia
Zerene Caesonia (Stoll)

THIS butterfly is a species of the "Tribe of yellows," and is a remarkable example of unusual wing marking. The fore wings are black with a splash of yellow in the middle of each, forming a yellow silhouette of a dog's face.

This silhouette has given this butterfly its name of Dog Face—also called The Dog's Head. It has a wing expanse of about two to two and a quarter inches. The female, lighter in color, has the same markings as the male.

Although this is a southern species, its range is from Florida to the Gulf States, northward to Wisconsin and is rapidly extending to other states. The caterpillar is a very pale green with a small white stripe running the entire length of the body; there is a small dark transverse line on each segment. They feed on false Indigo, and various leguminous plants.

THE CLOUDLESS SULPHUR

Catopsilia eubule (Linn.)

THE range of the Cloudless Sulphur is from New England, Wisconsin, and Nebraska southward to far beyond our borders. In Florida and the southern states they congregate in dense swarms.

They fly with swift flutterings, alighting in groups upon the ground to sip the moisture. At your approach they are off in a startled, rapid flight, again alighting a short distance ahead.

The eggs are deposited singly upon leaves of their food plants, various species of cassia and legumes; they hatch into bluish-green caterpillars with two yellow stripes running the length of their bodies.

They form odd-shaped chrysalids, the back being concave; the butterflies soon emerge, with a wing expanse of two and a half inches. The upper surface of the wings of the male is sulphur yellow, the margins lightly outlined by small brown spots. The female is plain yellow, a tiny brown spot in the middle of each wing.

The Cloudless Sulphur

THE ORANGE SULPHUR

Eurymus Eurytheme (Bvd.)

THE Orange Sulphur is one of that Tribe of Yellows of which there are so many varieties and to the casual observer, all the same species of little yellow butterfly. They are all happy, sunshine dancers, and we realize they do much to brighten up the landscape. We miss them when a cloudy day comes and they are not to be seen flying over the flowers in fields and garden or seeking a moist spot of earth by the roadside, as that variety known as the Puddle Butterfly, does.

The Clouded Sulphur we see most frequently in the East and the Orange Sulphur in the West, but the range of both is wide. The eggs are laid upon leaves of red and white clover, grass, and other plants.

These eggs hatch into small caterpillars varying in color from pale green to grass-green and often slightly rust color, always blending so perfectly with the color of the leaves upon which they are feeding, that they are not easily seen. When the plant upon which they are feeding is shaken, or if they are in any way disturbed, they promptly drop to the ground and remain there, almost motionless until they feel sure danger has passed, then they return to the leaf they were devouring when disturbed. They cast their skins several times within a month or less, and then change into small chrysalids, from which the butterfly comes forth in about eight days. There are numerous broods in a season.

This is one of the butterflies that has females of two different types, one orange-yellow with marginal wing marking of black, often varying to grayish or brownish-black, containing a series of yellow spots, both wings yellow to orange, two small orange spots on hind wing, two black dot-spots on fore wing, body black on back, under side pale yellow. The other type female is identical

to the first in wing marking, but is white, with no trace of yellow or orange. The male is yellow to orange with similar wing marking, except the marginal wing border, which is without spots. The type shown in the illustration has the dull yellow coloring oftenest seen in specimens caught in the vicinity of New York, although many with brilliant orange-toned wings are seen in the late Autumn.

In some sections of California the larva of these butterflies do serious damage to the alfalfa crop, for in this warm section the breeding season is practically the entire year, and there are numerous broods from March until late December. They seem to be harmless in other sections, especially when one considers the vast number of them.

On a short walk, any sunny day from early spring to late autumn, from coast to coast, one will see hundreds of these decorative butterflies fluttering like bits of sunshine across field, wayside, city yard, and park.

The Orange Sulphur

THE WHITE CABBAGE BUTTERFLY

Pieris Papae

THIS familiar little white butterfly can be found in profusion wherever cabbages, turnips, mustard and kindred plants are grown. It is, without doubt, the commonest butterfly in the United States, and the larva is a very serious pest to gardeners and farmers from coast to coast.

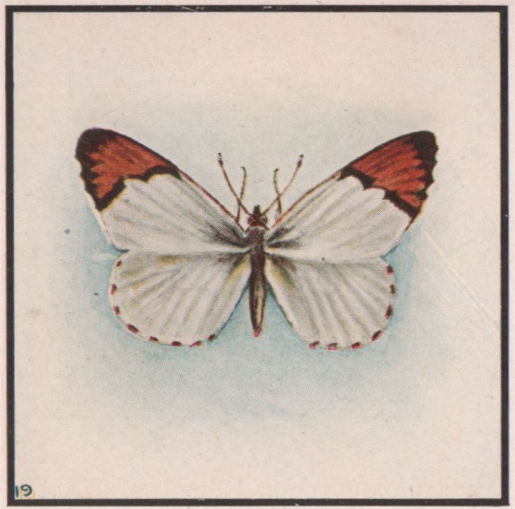
It was imported from Europe about seventy years ago, evidently accidentally; probably eggs, or chrysalids were secreted in a shipment of seeds or plants, this being the way a large proportion of our most destructive insect pests have been brought into this country. There are two native varieties of cabbage butterflies that at one time were very plentiful —the Gray-veined White and the Checkered White. They are rapidly growing less numerous, and the undesirable importation of the White Butterfly is becoming so abundant that it now greatly out-numbers all other species and its larva is by far the most voracious insect.

The male of the *Pieris rapas* is slightly smaller than the female, the latter having a wing expanse of two inches. The size varies in the different broods, there being two to three in a season, depending upon the locality. All of the butterflies that appear in the very early spring have wintered in the chrysalis, and are noticeably smaller than those of the following broods. Another difference is that the wing markings are less heavy than those of later broods: in fact, many have no black on the upper side of the fore wings.

Normally they are white with a black spot on each wing and black or greenish-black front angles of the fore wings. They have delicate, long tongues, which they keep coiled when not feeding. They deposit their eggs upon the leaves of various plants, but show a decided preference for cabbage.

The eggs are pale yellow and are fastened to the leaves by a glue-like substance. These eggs hatch in about a week into small green caterpillars, called cabbage worms. The worm moults several times before it becomes full grown. It retains the same shade of green after each moult and so nearly matches the green of the cabbage leaves that it readily escapes the sharp eyes of the birds. It spins a few strands of silk on the under side of a leaf, fence rail, or any protected place, and starts the formation of its chrysalis; it casts its skin and emerges as a gray, greenish-gray or brownish chrysalis. The color varies, always blending with the color of the surrounding surface. In a week or ten days the butterfly emerges. There is considerable variation in the length of time required for the complete change from the egg to the butterfly, depending upon the temperature—in the northern states it takes about five weeks for this change, while in the very warm southern portions of the country but three weeks elapse from the time the egg is deposited to the day the butterfly dries its wings.

The White Cabbage Butterfly



The Orange Tip

THE ORANGE TIP

Euchloe sara (Lucas)
Synchloe genutia

THIS small but showy butterfly is a westerner—but is also found in the East. There are numerous varieties of the Orange Tips, the one shown here has a wing expanse of one and three quarters inches. These butterflies fly about plants of the mustard family, creiciferae hedge, and rock hedge. The coloring of the blossoms and insects blend so perfectly that the latter seem to disappear when they alight upon these plants.

The caterpillars feed upon the leaves of the above-named plants in the spring and form chrysalids which, in the more Northern states, do not come forth as butterflies until the following spring. The greenish markings of the underside of the wings, cause these butterflies to blend perfectly with white and cluster blossoms when they alight on them with wings closed.

THE COMMON BLUE

Lucia (Kirby)

THE tribe of The Blues is a large one. The form shown here—Lucia, can be easily recognized by the brown patch on the under side of the hind wing.

There are a number of forms of the Common Blue (*Lycaena pseudargiolus*), all of them abundant.

Two of these forms winter in the chrysalis—the Lucia being the better known, as it is the first to appear in spring. In fact, the Lucia and the other winter form (*Marginata*) both have been seen near the Arctic Circle. The range of the Common Blue is from Alaska to Florida.

These butterflies deposit their eggs in the bloom bud of the Dog-wood trees and upon the rattle weed, but they also thrive in other locations. The eggs are pale green, flat at the base, covered with white lace-work. They hatch in about eight days. The caterpillars are greenish-white with small black heads.

The Common Blue

The Wanderer

THE WANDERER

Feniseca Tarquinius (Fabr.)

THIS small butterfly has several nicknames, and we might add another to the list, calling it Camouflage, because its larva—which feeds upon the wooly Aphids usually known as Plant Lice—spins a silky web, covers it with the skins of Aphids it has devoured and lives in this artful bit of concealment. This appears to be the only butterfly that has an insect-eating larva and one that does no harm to the plants it is found upon, but destroys Aphids, which it captures with its four-toothed mandibles and sucks dry, leaving practically empty skins.

This small caterpillar is green with three dorsal white stripes and one at the base of the feet; it casts its skin three times. The chrysalis is smoky-gray, slightly darker on the back.

Its range is from Nova Scotia to the Gulf of Mexico and Mississippi Valley.

Wing expanse one and a quarter to one and a half inches.

BALTIMORE CHECKER SPOT

Melitaea Phaeton (Dury)

SWAMPY meadows are the best places to look for the Baltimore Checker Spot—a bright-winged butterfly with a wing expanse of about two inches.

It is found throughout the northern half of the United States, in Canada, and in many parts of the world; there are numerous varieties of this genus in the United States during June and July.

The female is larger than the male.

The eggs are laid in clusters on the underside of the leaves of the food plants, Turtle-head being a favorite.

The eggs are brownish-yellow when first laid, turning crimson and becoming black before hatching.

The caterpillar is black, banded with orange-red and covered with black spines.

After the third moult they construct a community web in which they hibernate, moulting twice the following spring.

The chrysalids are pearl gray, blotched with brown spots and orange markings.

The Baltimore Checker Spot

THE GRAYLING

Wood Nymph—Cercyonis alope (Fabr.)

From the Atlantic to the Pacific, this well-known butterfly may be seen flying in gardens, orchards, and woodlands from July and August, when they emerge from the chrysalis, until late fall. There are many varieties, all known by the name of Wood-Nymph, the Sea Coast, the Blue-Eyed, the Dull-Eyed, the Southern, the Hybrid, and so on—and so on through a long list.

These varieties vary in wing coloring from red-brown to slate-brown and brownish gray.

There is a yellow blotch at the apex of the fore wing which varies in color and size from clear yellow to cloudy orange: from a wide band to merely an outline around the eye-spots. There are two of these eye-spots on the yellow band, they vary from quite large to mere dots. The spots on the hind wings show even greater difference ranging from two on the upper side to merely one faint speck-dot; on the underside from a chain of six or more to one faint mark and in some varieties the hind wing has no eye marks. The under side of both wings is usually beautifully marked, being striated and spotted, the outer margin slightly scolloped.

One of the most abundant of the Wood Nymphs on the Pacific coast is the California Ringlet, being a brownish-white or buffish-white with quite small eye-spots on the under side of the wings. It flies in the autumn. The eggs of the *Cercyonis alope* are barrel shaped, diminishing in size on the upper half, and there are numerous vertical ribs; they are laid late in June and hatch in about three weeks. The caterpillars are very light green and have two pale stripes on each side. They are small with cylindrical bodies tapering toward each end, the head is globular, and they feed upon grass, being one of the least destructive of all caterpillars.

They do not feed when first hatched, they immediateiy begin their hibernating fasting and do not begin feeding until spring. They are very slow in developing and do not change to green colored chrysalids until the following June. The butterflies appear in July and August. In many sections of the country this butterfly is known by the name of The Meadow Brown. It likes the wooded sections, also the meadows near streams or fences; in fact, anywhere where the grass grows tall and rank, for it is upon this grass that the eggs are deposited. These butterflies are not easily caught, for while they fly in a leisurely manner, they have a way of just avoiding capture by a few inches; then suddenly flying back and forth in a swift bewildering zig-zag—finally darting into dense foliage usually low growing tree branches, where they remain motionless a long time. It is entertaining to watch one of these insects eluding a collector's net, but not so laughable when you are the pursuer. The wing expanse varies from two to two and a half inches.

The Grayling

Colaenis Julia

COLAENIS JULIA

(Fabricus)

BUTTERFLIES of this genus are much like the well-known *Heliconians* in outline, their wings being narrow and long, particularly the fore wing. The wing expanse is three and a half inches.

The larva greatly resembles that of the genus *Dione,* and feeds upon passion flower leaves.

There are a number of species, two of which are found in Texas, parts of Florida and in the warmest parts of other Gulf states, but is not plentiful in any section of the United States.

The other variety found within our borders is the *Colaenis delila* which is like *Colaenis julia* in outline, except that the apex of the fore wing is more pointed.

In color it is decidedly more yellowish and there are no markings on either wing.

It has a wing expanse of from two to three and a quarter inches. The range of these varieties is much the same.

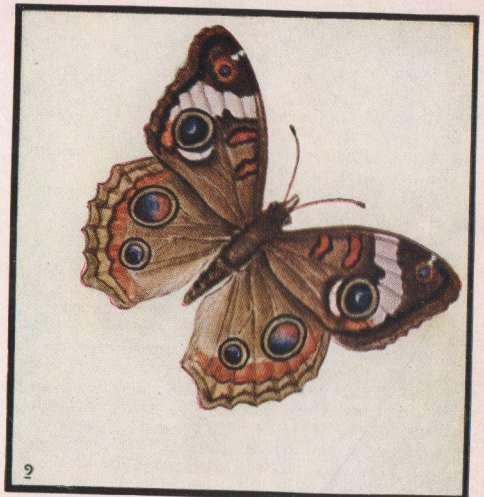
THE BUCKEYE BUTTERFLY

Junonia Coenia (Hubner)

THIS butterfly is well known throughout a large portion of United States. Its range extends from Florida to Massachusetts and throughout the Middle States to the Pacific Coast and occasionally it is seen in Maine.

The Buckeye Butterfly deposits its eggs upon the leaves of the gerardia, fig-wort, plantain and snap dragon. The eggs are placed near the tips of the leaves, and they hatch in from five to six days, small, spiny caterpillars. When they are fully grown they are black with the dorsum speckled with fine white spots—cream-white lines on each side, head a dull yellow. At times these caterpillars leave the food leaves partially eaten, giving the plant a ragged appearance.

In the Southern states there are several broods in a season, three, and likely four, but in the North there is generally one. In some mild regions there are two.



The Buckeye Butterfly

PARNASSIUS SMINTHEUS

(Doubleday and Hewitson)

THESE butterflies are often called the Parnassians. There are several varieties, all of which are found in high altitudes. They vary considerably in color and marking, the females being much darker and slightly larger than the males.

The *Parnassius Smintheus,* female (variety *hermodur,* Henry Edwards) is one of the most striking and beautiful of these mountain-loving butterflies, which are found in the mountainous regions from New Mexico and Colorado westward to California. They are common in Montana; and range as far north as Alaska, being very abundant on and in the region of Pike's Peak. These delicate-looking butterflies seem far too frail to withstand the winds, cold, and snows of mountain tops, but there are four varieties found even in the highest altitudes of the Rockies, the Sierra Nevada and Wyoming mountains, where they thrive.

Their wings are thinly scaled, and they are exquisitely frail and translucent.

The eggs are laid upon the leaves of the food plants; these eggs are turban shaped, somewhat flattened, and are thickly covered with small granulations.

The caterpillars are dark or dark brown in color and are marked with many light spots; they feed upon the foliage of sassafras and the stonecrop (sedum) which is a perennial, smooth-leaved plant that attaches itself to rocks and walls.

These caterpillars are unusual in form, their bodies being somewhat flattened and their heads very small.

They form their chrysalids on the surface of the ground, hidden under fallen leaves or any kind of litter that is dry and offers slight protection from birds and other insect-eating enemies.

These chrysalids are short and are well rounded at the head.

They are not encased in a cocoon, but there are a few strands of silk spun around them, loosely entangling a few dry leaves or pieces of bark.

The female of the *Parnassius Smintheus* has a wing expanse of from two and a half to three inches.

The fore wings are long with rounded apex, the hind wings are rounded, and the inner margins are more or less excavated.

They are cream-white with wide marginal bands of pinkish gray, which extend well over the fore wing, with markings of brown and black, and red spots outlined with black.

The male is smaller than the female, and it is much lighter in color, the hind wings are cream-white with two very small orange-red spots outlined with black; the inner margins are bordered with gray-brown. The fore wings are cream-white, gray-brown at the base. with light markings on the costal and outer margins. It has a wing expanse of from two to two and a half inches.

Parnassius Smintheus

Brazilian Skipper

BRAZILIAN SKIPPER

Calpodes ethlius (Cram.)

THE Brazilian Skipper is well named—and it comes from a large family—all as erratic and hippity-skipperty in their flight as the Brazilian is. There are about two hundred species of Skippers in the North temperate zone.

Several are outstanding among this swarm—the Brazilian is one of these, and one of the best known.

Its range in the United States, is Florida to South Carolina, the Gulf States, and parts of California.

It is found in other sections as a straggler, a few having been seen in New York, and many in Washington, D. C.

It lays its eggs on the leaves of its favorite food plants, such as Cannas, beans, wisteria vines. The larva makes a very "sketchy" type of cocoon on the ground. The female of the Brazilian Skipper is like the male in coloring except that the three spots on the fore wings are more alike in size.

LONG TAILED SKIPPER

Goniurus proteus (L)

Eudamus proteus

ONE of the most attractive of the Skipper Butterflies is the Long Tailed Skipper, found often in the Gulf States, and in all of the Atlantic States from Florida to New York, where it is very rare.

The caterpillar when fully grown is gray, dotted with yellow and black in transverse line and the collar is black.

The legs are black, pro-legs yellow. The head is large, brown, slightly depressed at the top and has an orange spot on each side. It feeds on leguminosae, wisteria, locust, etc. Each caterpillar fashions a nest from a leaf, which it leaves to go on foraging expeditions.

The chrysalids appear to be sprinkled with a white powder. The Skippers are divided into two families:—The Giant Skippers, (Megathymidae) and The Common Skipper. (Hesperiidae). The Common Skippers have long antennae—the ends of which are recurved.

Long Tailed Skipper

THE BAG-WORM

Thyridopteryx ephemeraeformis

THYRIDOPTERYX *ephmeraeformis*—what a long name!—no wonder this insect hides itself in a bag, seeming to fear the wrath of some amateur entomologist who has tried to pronounce it.

It is known by two other names—the Bag-worm Moth and the Psyche Moth. There are various species of this moth throughout the United States; the shape, size, and manner of placing the leaves and twigs in the construction of their baglike cocoons and the size and color of the males differ—but in all the species the females are wingless. They get no farther into the sunshine than the entrance of the leaf-twig bag that each has spun, where they meet their flying mate.

They deposit a surprisingly large number of soft, yellow eggs, almost filling the upper end of the bag-cocoon. After the eggs are laid the female dies, the body completely sealing the opening at the lower end of the bag.

These oblong, closely packed eggs remain in the cocoon all winter and do not hatch until the following May. The newly hatched worms are very active and soon they are all busily constructing a bag shelter, adding a little to it each day as their bodies grow larger. This construction work they begin by standing firmly on their anterior feet with their tails held high; then they proceed to spin a circle of silk around themselves—soon beginning to weave in bits of leaves and twigs. As they spin they gradually push the bag up and increase the width as well as the length—when it becomes uncomfortably heavy to hold upright they permit it to hang down. Some of these bags are almost smooth, while others are shaggy with overlapping bits of leaves.

During this time of spinning they have moved about on the tree or bush, their tender bodies inside the bag with only their head and thoracic legs protruding.

They are extremely slow travelers. These caterpillars feed upon many varieties of foliage, trees, bushes, and a very few vines—and do great damage.

They cast their skins four times, and when full grown they select a twig and fasten the bag-cocoon to it securely by a tough silk band. They proceed to thoroughly line it with a thick coating of silk, then they seal the entrance.

The chrysalids are now formed. They are long and brown, those of the males, being half the size of those of the females.

Three weeks later (in August or September) the moths emerge, the males clinging for a few minutes to the outside of the cocoon-bag to dry their newly-unfolded wings, then fly away. They have a wing expanse of a little over an inch; their bodies are blackish and the wings are clear.

The Abbott's Bag-worm Moth is a species common in the southern states; it is brown and has a wing expanse of one and a half inches.

The Bag-Worm

HUMMING-BIRD CLEAR WING

Haemorrhagia thysbe (Fbr)

THIS moth is well named—it certainly looks like a humming bird when it hovers over the flowers. Nearly all moths are night flyers; during the day they remain motionless, clinging to tree trunks, old wood or among leaves, utterly unnoticed. The protective coloring of the under side of both wings and the upper side of the fore wing usually so closely resemble or blend with the back-ground they choose to rest upon, that not even the sharp eyes of the insect-eating birds can readily find them.

But the Humming-bird Moth breaks this rule. Not only is it a day-flyer but, like the butterflies it seems to thoroughly enjoy flying about in the bright sunshine, its wings making a blurr on either side of its humming-bird-like body, as it flies over flower beds.

There are several species of this attractive insect in the United States, some being so much smaller than the *Haemorrhagia thysbe,* that they give the effect of large bumblebees when in flight. The Clear-wing shown in the drawing was not a clear-wing when it first emerged from the chrysalis. It then was like other moths, the wings being fully covered by the minute scales that the wings of all moths and butterflies have. There is a difference in the way these scales are attached, so that the first few swift flights the moth makes dislodges those on the discal area and the moth becomes a clear-wing. At the end of the season so many of these loosely attached scales have been dislodged that only a marginal border of rich, dark red scales remains. The larva of this moth feed on the leaves of the snow-berry, hawthorn, and honeysuckle, being very fond of the latter. These caterpillars are pale green on the back, darker green on the sides, and there are three brown stripes on the under side.

It has a caudal horn of bright yellow, tipped with blue black. Many of these caterpillars are brown or greenish on the back with brown sides. They form a loosely-made cocoon on the ground under fallen leaves or anything that gives it slight protection. It is double brooded. It is very tame and easily captured. It is often called the Humming-bird Sphinx Moth; it belongs to the genus Hemaris.

Like all the Sphinx and Hawk Moths it has a large body, which is not quite as long and tapering as that of many of its cousins. The wings are very long, narrow and are small, especially the hind ones, in comparison to the heavy downy body. This moth has a very long, flexible tongue, and when not feeding it keeps it rolled tightly between two velvety tabs.

One species, the *H. brucei* that is found in Utah and Colorado is smaller than the *Haemorrhagia thysbe* which is a northern and Eastern species and in California there are one or two varieties of *H. diffinis:* these are but a few of the varieties of this unusually attractive moth.

Humming-Bird Clear Wing

The Leopard Moth

THE LEOPARD MOTH

Ecpantheria deflorata (Fabr.)

THE Leopard Moth has a range from New England to the Mexican border, becoming more abundant toward the southern portion of its range.

The eggs are pale turquoise blue and the caterpillars when first hatched are brown and amber, the entire body thinly covered with black and white hairs. It moults five or six times and when fully grown is a large hairy caterpillar, black and reddish-brown, each ring marked with a fine line of crimson. It feeds upon various foliage, but the following are considered to be its food-plants: willow, wild sunflower and plantain. When disturbed it rolls into a ball of bristling hair that any insect-eater will avoid.

The Leopard Moth has a wing expanse of about three inches. The wings are white, the fore wings are marked with dark rings and ovals, the hind wings with a few irregular dark spots on the margin.

HAPLOA CLYMENE

THE wing markings of this moth vary considerably.

Its larva is one of the so-called Woolly Bears—those well-known caterpillars so plentiful during the summer and fall, with their dense coat of long, strong hair. This hair is not only useful as a protection from insect-eating enemies, but their cocoons are composed mostly of this hairy coat closely woven with silk web.

These caterpillars feed on various plants, sometimes becoming destructive, for they often find their way from the fields to cultivated plants in gardens.

The *Haploa clymene* has a slender outline of wing and body that is much like a butterfly. The wings are yellowish-buff, the fore wings being slightly lighter, and having an incomplete narrow marginal border of dark brown; there is an odd, bent bar mark of dark brown extending from the lower margin of the fore wing to about half its width, and the hind wings have a small irregular brown spot.

Haploa Clymene

THE ACRAEA MOTH

Eastigmene Acræa

THIS dainty and well-known little moth is found all over the United States and is one of the most frequently seen moths throughout all the middle Atlantic States.

The female of the Acræa Moth has beautiful snow-white wings with small black spots, there being very few on the hind wings. The body is yellow with three rows of black spots and the thorax is white and downy.

The male has the same marking but the hind wings are deep yellow. The size, number, and position of the wing spots vary considerably in different specimens of both male and female, and in some localities there are other slight variations.

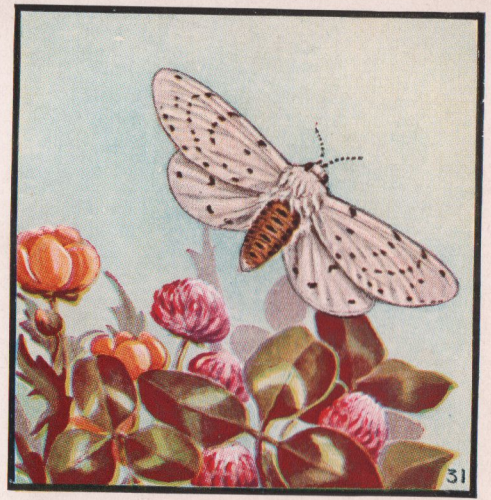
As well known as the Acræa Moth is throughout the entire country, the caterpillar is still better known as one of the so-called Woolly-Bears—those long-haired caterpillars that are every where in summer, many times where they are most unwelcome.

There are many variations in the black markings of the species of the Woolly-Bears and as there are more than a hundred species in this country, no wonder they are so well known. These caterpillars are covered with long, dense hairs and they are known by various unscientific names—such as Yellow Bear, Hedge-Hog and White Cub.

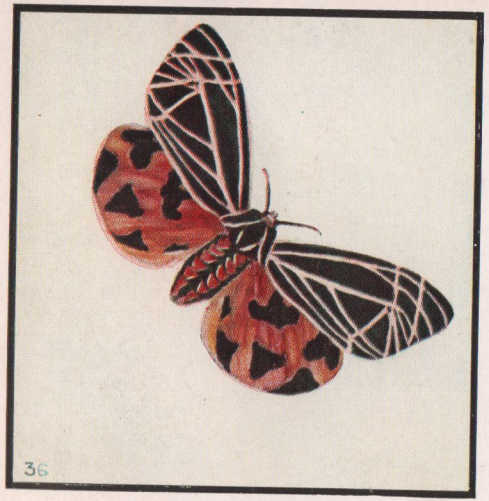
The caterpillar of the *Acraea* is the Salt Marsh caterpillar. Do not be misled by this name, for this caterpillar is found throughout the entire country, near marshes and also a great many miles from marsh lands. It feeds upon so many different kinds of grass, weeds, and leaves that it can find food in any locality. It spins a cocoon made up mostly from its long hairy coat. This dense hair protects these caterpillars from insect-eating enemies for not even the birds seem to relish a mouthful of stiff hair. These hairy caterpillars appear to sense

this protection, for they do not hide under the leaves while feeding as so many smooth caterpillars do. When at rest the fore wings of the *Acreaea* are folded downward, completely covering the hind wings, like all moths of this type. The legs are downy and are five jointed, ending in minute claws that enable the moth to cling so securely to any object upon which it alights that it is not easily dislodged.

A moth that greatly resembles the *Acreaea* but is a bit more slender and dainty, is the Ermine Moth *(Diacrisia Virginica)* which also has a black-spotted yellow body, but the only marking on the snowy white wings is a tiny black dot-spot in the center of each, the one on the hind wing being slightly larger than that on the fore wing. The larva of the Ermine Moth is the often-seen Yellow Bear, always seeming to be in a great hurry to reach a more desirable spot. Like all the Bears it has a black shiny head—like a bit of enamel.



The Acraea Moth



Virgin Tiger Moth

VIRGIN TIGER MOTH

Apantesis Virgo (Linn.)

THE Virgin Tiger Moth is one of the most brilliantly colored and attractive of this species.

Its range is the Atlantic states—where it is very common, but strays are found in other sections—one of the finest specimens the writer ever captured was found in Massachusetts.

The larva of this moth is covered with long dense hair, it being one of the well-known Woolly-Bear caterpillars to be found in so many fields and gardens during summer and fall. It feeds on a variety of low-growing plants, showing a preference for pig-weed and plantain.

The fore wings of the Virgin Tiger Moth are black with narrow line-markings of pinkish buff or yellow—markings and coloring vary greatly in different specimens. The hind wings are red or pinkish-red with irregular spots of black. It has a wing expanse of about two and a half inches.

BEAUTIFUL UTETHEISA

Utetheisa bella (L)

THIS dainty, beautiful little moth, the *Utetheisa bella,* is the only member of the genus to which it belongs found in the United States, except the *Utetheisa ornatrix,* which is found in Southern Florida, and has much lighter fore wings.

The *Utetheisa bella* is a familiar little moth, for it is often seen flying low in the daytime. Although not a food plant of its larva, it is found upon goldenrod in late summer and fall.

The caterpillars feed upon the foliage of the elm and cherry, the seed pods of the rattle-box, wild indigo, and various other plants. It is easily recognized by its deep pink hind wings, which are slightly darker near the base, and have a white-edged black branching border. The fore wings are deep ochre yellow with six bending white bands containing black dots.

The larva lives in scant, open webs which it spins on the food plants.

Beautiful Utetheisa

DARLING UNDERWING

Catocala Cara (Gn.)

Did you ever see a brilliant-winged moth fly leisurely by—and then suddenly vanish!—no matter how persistently you searched you could not find it. That was an under-wing, a night-flyer, but it can be seen occasionally in the daytime for a few moments of uncertain flight, probably dazed by the glare of the sun, in motion only because it has been disturbed from its resting place on the trunk of a maple or other neutrally colored surface with which the coloring of its fore wings blended so perfectly it was simply indistinguishable.

The care with which these insects select their daytime hiding places is remarkable, always a surface with a coloring or mottling that will tone with the tints of their folded wings. Often the spot chosen is completely exposed to view. They cling there motionless hour after hour, and you pass by many of them every time you walk through a wooded section of the country or a park.

The brilliantly colored hind wings show only when the fore wings are raised.

The *Catocala Cara* is often found upon the trunks and branches of the maple. Not only does the coloring and texture of the bark of this tree offer complete protection, but it is not often visited by woodpeckers, for, being unusually free from insects, birds find maples poor hunting ground.

If you wish to capture under-wings, "sugar" for them. They can readily be attracted by smearing the trunk of a tree in summer time, with molasses and if stale beer is added it makes a much better bait. Sugar and water boiled to a syrup and when cold mixed with stale beer can also be used; just after dusk is a good time to watch for them.

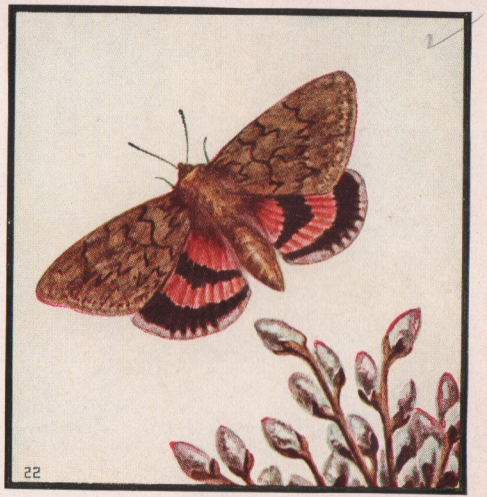
There are so many varieties of *Catocala,* all of them interesting and beautiful, with brightly colored hind wings of red, yellow, orange—even the brown and white of the *Catocala relicta* is showy. The latter species is found on the white birch trees, the fore wings seemingly a piece of the bark; it takes a keen eye to find them when they are resting with closed wings. The under-wing moths hide their eggs in the cracks of the bark of their food trees.

The larva of *Catocala Cara* is gray-lavender or wood-brown, it tapers toward both ends, the head is purplish, and there is a small fleshy horn near the middle of the back and two smaller ones near the tail.

It feeds upon the foliage of willow, poplar and maple. It descends to the ground in July; it spins a cocoon of silk and leaves, under fallen leaves.

The pupa inside the loosely constructed cocoon is covered with a bluish dust.

The moths emerge from July to September, and they have a wing spread of three and a half inches.



Darling Underwing

Ultronia Under-Wing

ULTRONIA UNDER-WING

Catocala Ultronia (Hbn)

THIS species of under-wing moth has several forms and each has a distinctive name—the one shown here is perhaps the best known because its larva feeds upon orchard trees and the flash of its pink under-wings is frequently seen.

When the fore wings are lowered, the moth seems to become a mottled piece of tree bark as it clings to a tree trunk. not a vistage of the bright under-wing showing. The eggs are deposited in the rough spots of the bark of the plum, apple, and wild cherry. The larva is about one and a half inches in length, grayish-brown with reddish tubercles on each body segment and a fleshy horn on the ninth segment.

The cocoon is spun on the ground under leaves in July. The moths fly from July to late October; their range is from beyond the Canadian border to Florida, from the Atlantic to the Great Plains.

THE BIG POPLAR SPHINX

Pachysphinx Polyphemus

THE Big Poplar Sphinx or Modest Sphinx—this moth is equally well known by either name.

It ranges over the entire length and breadth of the United States. There are several varieties of this species, all large and beautiful, the Eastern one being considerably darker than the one found in the West.

The caterpillar is about three inches long when full grown; it is light bluish-green with seven yellow oblique lines on the upper part of the body which is covered with small white dots; head is green, and the caudal horn very short.

It feeds upon the foliage of willow, balm-of-Gilead, poplar and kindred trees, showing a marked preference for the poplar. This moth is also known as the *Marumba Modesta*. When fully grown the larva descends the trunk of the food-tree and burrows into the ground where it forms a brown chrysalis.

The Big Poplar Sphinx

Tent Caterpillar Moth

TENT CATERPILLAR MOTH

Malacosoma Americana

THE most interesting thing about this moth is the curious tent its striped caterpillars spin in the fork of small tree branches.

These odd tents, fairy-like in construction, shelter hundreds of small, active caterpillars that are so abundant in many sections they are a pest, destroying foliage of many kinds.

The eggs are laid in clusters of from three hundred and fifty to four hundred, encircling a twig or small branch in a compact band, and are covered with a glossy, water-proof coating.

The caterpillars appear in early spring and all work to construct a small tent around the egg mass they emerged from.

Later they may enlarge this tent, but often they select a new location to construct a permanent tent.

When full grown they seek sheltered spots to spin their white, oval cocoons. The moths emerge in June and July.

TERSA SPHINX

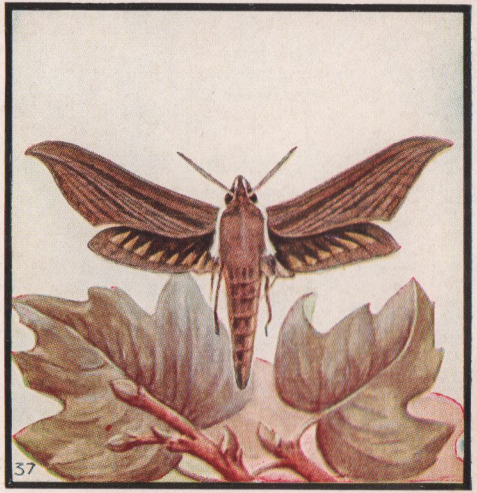
Xylophane tersa (L.)

THIS species is common and is easily recognized. The fore wings are beautifully marked with a series of alternating lines of brown-tan, dark brown and wood colors. The under wings have a marginal border of brown-tan followed by a series of graduated and enlengthened yellow triangles; the body is very long, smooth and tapering.

It is a very swift flyer, darting from flower to flower just at dusk, its long proboscis rolled tightly in a coil when not thrust deep into the heart of the flowers.

The eggs are laid upon the leaves of bouvardia and sycamora (buttonwood) trees whenever possible, these being the favorite food leaves of the larva of the *Tersa Sphinx*. When disturbed, this larva thrashes its body from side to side in a threatening manner, but is harmless.

It pupates in the ground and forms a glossy brown chrysalis. Its range is from Canada to beyond our southern border.



Tersa Sphinx

SPHINX MOTH

Philampelus Achemon

LINNAEUS, more than a century and three quarters ago, gave the name of Sphinx to this type of moth because of the Sphinx-like posture the larva will hold whenever disturbed.

The moths' long narrow wings and long tapering bodies make them distinctly different from all other species.

They are also called the Hawk Moths and there are many species in the United States.

At dusk they begin flying over such flowers as honeysuckle, petunias, and jimson weed. They hover—body distinctly seen—their extended wings in such rapid motion that they are blurred, giving the effect of tiny buzzing electric fans.

The very long tongue of this moth—a sucking proboscis—is thrust deep into the heart of each flower, sucking the nectar. This proboscis is often five to six inches long and when the moth is not feeding it is coiled tightly, like a watch spring, between two velvety tabs, the labial palpi, commonly called the tongue-cheeks or tongue-tabs.

The larva of the *Philampelus Achemon* feeds on various plants, but its favorite food is grape vine leaves and Virginia Creeper. It is a russet brown in color, with six diagonal chain-stripes of creamish white on both sides of the body. Above these is a dark brown horizontal stripe. On the last segment of the body there is an eye-spot that gives this harmless creature a rather formidable aspect. It forms a large chrysalis, chestnut brown and very long, under the ground in October and the moth emerges in May.

It is a very quiet moth when not seeking food.

Its range is all the Eastern and Central States where it is very plentiful, and strays are found in many other localities.

The upper wings of the *Philampelus Achemon* are various shades of tan, ash-

gray and brown, and when folded over the brightly colored under wings, as they usually are when the moth is not in flight, they tone so perfectly with the object upon which it has alighted that the insect and background blend indistinguishably.

When the moth is in flight it is a showy object, but as soon as it alights upon smooth or rough tree bark, rocks, or weather beaten wood, it seems to have utterly vanished.

This protective coloring is found in many species of moths and is not only a great protection from their many insect-eating enemies but has caused many a collector—the writer included—after a long chase to give up in utter bewilderment and then suddenly see a flash of color as the upper wings are raised.

The eggs are laid on the leaves of the food plants, usually the grape, and the destructive larva causes great damage to the vines.

This moth has a wing spread of about three and a half inches.

Sphinx Moth

THE ABBOTT SPHINX

Specodina Abbotti (Swains)

THE Abbott Sphinx is one of the Hawk Moths, but is not the usual shape for one of this species, as most of the Hawk Moths have long tapering bodies—thin and smooth—while the Abbott Sphinx has a decidedly large, round body, rough-coated and short.

Do not confuse this moth with the Grape-vine Ampion *(Ampion Nessun)* which closely resembles the Abbott Sphinx *(Specodina Abbotti)* and has almost the same range; but there are several distinct differences, one of these being that the wings are somewhat shorter and darker and the under side of the body is yellow banded.

The larvae of the Abbott Sphinx are a ochre-gray with a maroon tinge, finely lined, and blotched with brown. They have a bright, shiny eye-like tubercle (when full grown) in place of a caudal horn. This larva has another coloring, it often is found with such large green blotches that at first sight one would think it to be entirely of this color.

It feeds upon the leaves of the grape vine, Virginia creeper, and woodbine. The writer has a brick wall thickly covered with large-leaf woodbine upon which many of these caterpillars feed—leaving large clusters of leaf stems, the leafy portion being entirely eaten away.

The name of Sphinx was given these Hawk Moths because of the position the large, ugly-looking larva assumes when disturbed; it draws its head under until it rests upon the thoracic feet and raises the front half of its body a full inch—or more—from the leaf it was eating, and remains in this Sphinx-like position, motionless for a long time. If touched it contracts slightly and becomes more rigid—if further annoyed it thrashes its body from side to side in a furious manner and at the same time utters a threatening, squeaky sound, but despite this pugnacious attitude it seems to be both harmless and defenseless.

It is about two and a half inches in length; it changes to a brown chrysalis which is hidden under dead leaves and rubbish of any kind that offers slight protection and concealment. The tongue case is not free from the chrysalis.

The wings of this moth have a wavy outline and a beautiful velvety surface. The fore wing is marked with wavy lines of different shades of gray-brown and black, being darker at the base.

The lower half of the hind wing is a partially blended marking of gray and black lines, the basal half is bright yellow. The body is gray and brown with black band and tufted end. It is found throughout the eastern states and as far west as Iowa and Kansas. It flies after sunset over such flowers as honeysuckle, petunias, and lilies—in fact, all deep-throated blossoms.

The Abbott Sphinx

FIVE-SPOTTED HAWK MOTH

Protoparce Quinque-maculata (Haw.)

THIS is a very common moth, with the long wings that are characteristic of all the Hawk Moths.

In the Southern states where tobacco is raised it is called the Tobacco Fly and is very abundant, the larva doing much damage to the leaves of the tobacco plants.

The writer has seen large plants with holes chewed in many leaves and others with large portions eaten away by this large green caterpillar which also feeds upon the potato plant, tomato, and jimson-weed leaves. This moth has five black-bordered orange-yellow spots on each side of its body.

A moth of the same genus and quite similar in the destructive habits of its larva—the food plants being the same—is the *Protoparce Carolina,* also called *Sexta* because of the six orange-yellow, black-edged spots along each side of its body.

The larvae of these two moths are the well known, so called tomato-worms or tobacco-worms—those very large, thick green caterpillars with oblique white stripes on their sides and a sharp caudal horn, that of the *quinque-maculata* is blue-black or green, while that of the *sexta* is red. These moths are also called *Phlegethontinus Quinque-maculata (Celus)* a name almost as long as its fore wings! —and *Phlegethontinus Sexta;* the wings of the former are ash gray with wavy zigzag lines of black, greenish-black and brown.

The hind wings are silverish gray-white with black zigzag lines, black bordered and clay-color margined. The thorax is beautifully mottled and there is a downy white band next to the body. The proboscis is extremely long and is coiled like a watch spring between two velvety cheek tabs when the moth is not feeding. It hovers over dee-throated flowers with its long tongue thrust down to reach the nectar.

When resting motionless on the trunk of a tree, with its wings lowered to cover the bright orange-yellow spots on its body, the coloring of its wings blends so perfectly with the bark that it is almost invisible: thus it safely spends the sunlight hours.

The chrysalis is formed in the ground, it is long and has a free tongue case, which looks much like the stem of a leaf bent downward until the end rests upon the body; it is green when first formed but soon turns dark brown.

These moths are found everywhere in the United States where tobacco, tomatoes, and potatoes grow, and are undoubtedly the best-known of the Hawk Moths. The *Quinquemaculata* is more plentiful in the North and the *Sexta* in the Southern states, where they are often called the Trumpeters or Hornblowers, because of the formation of the chrysalis—the free tongue case looking like a horn or trumpet.

Five-Spotted Hawk Moth

The Rosy Maple Moth

THE ROSY MAPLE MOTH

Anisota rubicunda (Fabr.)

THIS soft-colored moth is found in many sections of the United States, but is most abundant in the Middle West and is found eastward to New York.

The eggs are laid upon the maple trees, the foliage of which is the food-leaf of its larva; it is occasionally found upon the oak.

The caterpillar is light green with pale longitudinal lines and is banded with rows of tiny black points. There are two black upright horns just back of the head, which is light brown.

In some sections this caterpillar is so injurious to the silver maple that it is considered a pest. The chrysalis is long, well rounded at the head, dark pinkish-brown and is somewhat shiny. This moth is also called *Dryocampa rubicunda.*

The male is considerably smaller than the female, and has a flush of rose color at the base of the hind wing and the body is golden brownish-yellow.

NEVADA BUCK MOTH

Hemileuca nevadensis (Stretch)

THIS variety of Buck Moth, *Hemileuca Nevadensis,* is a westerner, with a range that extends from the Rocky Mountains to the Pacific.

The basal part of both wings is black with grayish tone, body black with slight marking of rust color at the end.

There is a small elongated eye-spot near the center of each wing. The costal margin of the fore wings is deeply concave, margined with velvety black, growing narrower as it reaches the apex.

Another variety of Buck Moth is the *Hemileuca maia,* (Dru.) similar in outline to the *Hemileuca Nevadensis,* except the fore wings are but slightly concave. The wings are brownish-black with a pale yellow band crossing both wings, wider on the hind wings, body black with rust-colored tuft at the end.

It ranges from Nova Scotia to Florida, and is found as far west as Kansas. Food leaves are the oak and other foliage.

Nevada Buck Moth

CECROPIA MOTH

Samia cecropia (Linn.)

THIS large moth with its soft, rich coloring is so well known that it hardly needs to be described, it is both common and popular and is one of the few moths that seem to have no "every-day name." There is a slight difference in coloring and size between the specimens captured in different locations; those in the Northern United States are smaller than those of the more Southernly sections; this smaller variety is the *Samia columbia*, and has a wing expanse of about four inches. It is found as far west as Wisconsin.

Another variety that has the same wing spread is the *Samia rubia*. The wings of this variety have a light reddish tone; it is found in the west, and is very abundant in Utah and Wyoming.

The *Samia gloveri* is found in the Rocky Mountains and westward, and the *Samia ceanothi* belongs to the Pacific Coast; of all these varieties of this beautiful moth. the *Samia cecropia* shown in the drawing, has the richest coloring. It ranges from the Atlantic to beyond the Great Plains. It is a night-flyer, but is sometimes seen on sunless days in summer, flying low in sheltered spots, usually near their food trees.

The eggs are laid in the late spring and early summer, they are yellow, and are deposited upon the leaves and branches of the food trees, which are almost any tree or shrub that has a woody growth, for the cocoons are always spun on the trunks or branches, never on the leaves. When first hatched the caterpillars are very small, but they grow rapidly and cast their skins four times; after the fourth moult they are full grown and are light green with bluish shading; there are four coral-red tubercles in pairs on the thorax, two rows of yellow tubercles along the back and two rows of blue ones along each side.

These caterpillars are very large, being one of the four species of the giant silkworms to be found in the United States; they are about four inches in length.

The cocoon is about three and a half inches long and is attached its entire length to the underside of the branch or fence rail upon which it is spun. It is a double cocoon, the outer is a grayish or brownish paper-like covering, very thin and tough, the inner one is ochre-tan and fibrous. The winter months are spent in the pupal stage, and the moths appear in the early summer, their velvety wings having an expanse of from five to six inches.

They are heavy-bodied moths with red thorax and white collar, the body is red, banded with black and white lines; the fore and hind wings are greenish-gray, with reddish, black and varying tones of clay color, and margins of greenish-clay; each wing has a large discal spot, white in the center surrounded by blended red and outlined with black; there is a small blue eye-spot at the apex of fore wing.

Cecropia Moth

AILANTHUS SILK MOTH

Samia cynthia (Dru.)

THIS is one of the Giant Silk-worm Moths and is also called *Philosamia Cynthia*. Although thoroughly at home in the United States and abundant in the eastern seaboard region, it was imported from Eastern Asia more than seventy years ago for the purpose of commercially using the compact well-spun cocoons, as a good grade of silk can be obtained from them, but to date this has not been done as no method of reeling the silk from them has been found that can be used profitably.

The usual method of handling cocoons in the silk industry is to kill the chrysalids by heat before starting to reel them, but it is said that the Chinese used to weave silk of wonderful sheen from the living cocoons. Although the *Samia Cynthia* is a night-flying moth it, like so many of the large moths, often flies in the daytime on dull, cloudy days when the air is dry and warm. These moths seem to like civilization for some unknown reason, for their cocoons are oftenest found on trees and bushes near cities and towns.

One of the finest specimens I ever had was found in its cocoon on a young sassafras, although this tree is not considered a food plant of its larva, which is most often found upon the Ailanthus trees, these leaves being its favorite food. It also feeds upon sycamore, lilac, linden, cherry and wild cherry.

These silk-worms are very large and thick, they are green with small black dots and light blue tubercles, some of which are banded with black, the head and legs are yellow. They are usually seen grasping a twig or midrib with all their feet, their bodies hanging downward while they are busily eating. When they moult they devour their cast-off skins. When ready to form the cocoon, each selects a leaf and proceeds to fasten it

securely to the twig by covering the stem with silk and encircling the twig with a flat thin silk band that prevents the leaf from falling or being blown from the tree, this band usually encircles the twig so loosely that it allows the cocoon to swing freely although it can not be dislodged. The silk worm then forms a cocoon using the leaf as a support.

It spends the winter in the cocoon, and emerges in late spring, a very beautiful, velvety-winged moth with a wing expanse of five inches. The ground color of the wings varies from light olive-brown to olive-tan, with a crescent spot of yellow-shaded white on each wing.

There is a wide white-edged violet-pink transverse band crossing each wing, and there is a dark blue eye spot, light edged, on the apex of the fore wing. Both wings have clay-colored margins. The thorax is downy, the body large with a longitudinal series of white tufted spots and brown markings. The sturdy legs are hairy and the antennae are feathered.

Ailanthus Silk Moth

PROMETHEA MOTH SPICE BUSH MOTH

Calosamia Promethea

THIS particularly beautiful moth, the Promethea, is found plentifully throughout the entire Eastern portion of the United States.

It is one of the silk moths, and the long narrow cocoon it spins is found to be a silk of tough fiber. As yet no method has been devised to reel it successfully for commercial purposes, although many trials have been made to do so, but each and every one proved to be far too expensive to be practical.

The larva is a bluish green, with a longitudinal series of black and red tubicals. When this larva reaches maturity it reaches about two inches in length, it feeds upon many kinds of trees, but is oftenest found upon the foliage of the wild cherry, ash, sassafras, and the spice bush. In fact, the marked preference the Promethea Moth shows for the spice bush has caused it to be called by many, the Spice Bush Silk Moth. It is one of the largest and also one of the most numerous of the so-called "Big Moths" of the eastern portion of the country.

The larva of this moth spins its silken cocoon, which is always long and narrow, and proceeds to roll it snugly in a leaf, which it binds firmly with strong silk threads and webbing, winding the thread it spins, around and around the cocoon and attaching it to a twig of the tree. At the upper end of the cocoon there is a very cleverly planned and spun entrance, which is firmly closed from the outside, and no insect intruder can enter, but the moth has no trouble at all in coming out of this valve-like "door" without cutting or breaking the cocoon or injuring the new, frail wings.

The male Promethea Moth is a grayish-tan color with blackish shading and whitish markings, and a small blue eye spot at the apex of each fore wing. The female shown in the drawing is a beautiful shade of red brown with fawn colored marginal border, and with eye spots and white markings, same as the male.

There are many more varieties of moths than of butterflies in this country, the difference is believed to be forty-four to five. In Italy and Japan many country households have a silk-room, where they keep silk moths. They derive enough revenue from selling raw silk, to help pay household expenses. They raise silk worms from the eggs deposited by moths, and carefully feed and care for them. The Promethea Moth is easily raised, as the larva eats nearly any kind of tree leaf offered, but you will find that no matter how diversified the list of food plants a certain species of caterpillars will eat, it always prefers the kind of leaf it was hatched on and ate while growing to maturity. This seems to be more true of the larvae of moths, than of butterflies, but a truly hungry caterpillar will eat a variety of foliage not listed as its food plant, although it will leave it quickly if the favorite food leaf is offered.

Promethea Moth Spice Bush Moth

The Polyphemus Moth

THE POLYPHEMUS MOTH

Telea Polyphemus

THE well-known Polyphemus Moth needs no introduction to nature lovers in the United States, for its range is the entire country.

The larva feeds on various trees and is equally at home in orchards, on shade trees or in the woods; it is light green red dotted, and about three inches in length when fully developed.

It spins a silken cocoon, oval and compact, using a few leaves which it wraps around it and fastens firmly with silk threads. This cocoon may remain fastened to the tree all winter, but it usually falls to the ground during wind storms of autumn.

In the spring the Polyphemus emerges from its house of silk—a beautiful moth, ochre-tan, with violet-pinkish and blackish transverse bands and large black and blue eye spots, with clear "window" spots.

Unsuccessful efforts have been made to reel the silk from these compact cocoons.

THE LUNA MOTH

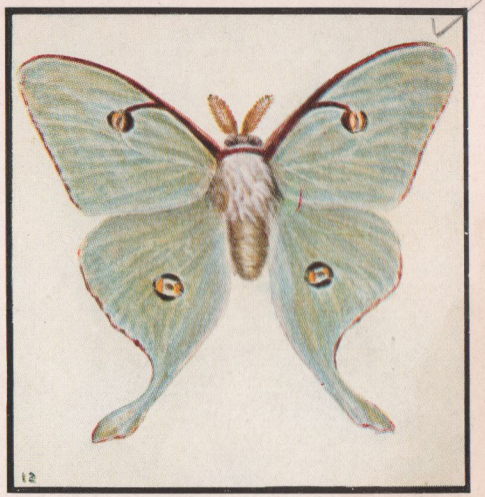
Actias luna (Linn.)

THE range of this moth is over the whole of the United States, from the most northerly boundary to Florida and from the Atlantic to the Pacific.

The color is usually a delicate yellowish-green—but occasionally one of an exquisite, pale greenish-blue appears. This is one of our truly beautiful moths, both in coloring and outline; it is often called the Empress of the Night. Specimens of this moth vary considerably in size, the average being four inch wing spread, but four and one half to five inch wing expanse is common in some sections.

The caterpillars feed on the foliage of hickory, walnut, and other forest trees. The larva is pale bluish-green, a yellow stripe running the length of the body. It measures, when full grown, from two and one half to two inches in length.

It spins a tough, compact cocoon, a combination of silk and leaves, on the ground.



The Luna Moth

The Royal Walnut Moth

THE ROYAL WALNUT MOTH

Citheronia regalis

It seems strange that the beautiful Royal Walnut Moth—also called Regal Walnut Moth—could possibly develop from such a fearsome looking caterpillar, which when full grown attains a length of four to five inches. It is usually yellowish or reddish-brown—but some specimens are green. Just back of the head curved blue-black horns rise curving backward, giving this harmless larva such a ferocious, hostile aspect, that it is in some localities called The Hickory Horned Devil. It feeds on a variety of tree foliage—walnut, hickory, persimmon, ash, sweet-gum, sumac and other trees. This larva burrows into the ground to pupate, forming a rough, brown chrysalis.

This moth has a wing expanse fully five inches. Body and hind wings are a velvety red-brown—fore wings are yellowish-slate-gray, with veins heavily marked by the same bright red-brown color of hind wings. Body is ringed with white.

THE IMPERIAL MOTH

Eaclas Imperialis

The Imperial Moth has a wing spread of about five inches.

The caterpillar is about four inches in length when fully grown. It varies in color from sage-green to brown, with a reddish tint on the back; the body is thinly covered with bristling whitish hairs.

There are short, stubby yellowish horns near the head, which is orange-yellow, feet the same color. It feeds upon the foliage of the oak, sweetgum, maple, elm, buttonwood, hickory, sycamore, pine, juniper, spruce and hemlock.

It burrows into the earth to pupate, working its way rapidly out of sight, leaving a curved ridge on the surface of the ground. It forms a brown, compact chrysalis and comes forth as a moth in May; it has a coloring of soft shades of canary-yellow and pink-purple markings.

The male has much the same coloring except that the basal portion of the wings are pink-purple. The thorax is downy.

The Imperial Moth

Io Emperor Moth

IO EMPEROR MOTH

Hyperchiria Io (Fabr.)

THIS moth ranges over the entire United States. There are four members of this genus. The male is shown here. The female is larger than the male and the fore wings are burnt-rose.

The wing expanse is two and a half to three inches. The fore wings of the male are canary-yellow with faint irregular markings of rose and brown; the hind wings have large blue eye-spots outlined with black and a narrow line of black slightly inside the marginal bands of rose and yellow, the inner margin has a downy band of bright brownish-red.

The caterpillar is green, two and a half inches in length when full grown, with a double stripe of white and crimsonish-rose on each side, the body is covered with clusters of sharp green spines, black tipped. It is a promiscuous feeder.

It spins a thin, parchment-like cocoon on the ground under dry leaves.

ROTHSCHILDIA JORULLA

(West)

THIS moth is found mostly in Arizona and along the Mexican border. There are two species, the *orizaba* and the *jorulla*. It is the American representative of the famed Atlas Moth of the East, which is one of the largest of the Lepidopters, with a wing expanse of ten inches. The *Rothschildia jorulla* is a large moth, with clear triangular-shaped translucent spots on the fore and hind wings.

The genus to which this unusual moth belongs is distinctly a neotropical one. It varies considerably in size and shades of coloring, some specimens being a greenish-gray tint, while others are a decidedly ochre-tan tone, the markings being the same. The fore and hind wings are a light grayish-brown with clay-colored margin, and a triangular window spot near the center of each wing, and a saw-toothed band of white edged with black on the inner side and pinkish red on the outer edge banding both wings.

Rothschildia Jorulla

INDEX

BUTTERFLIES

The rosy flush of early dawn,
The flash of gold of setting sun,
The grace of thistle-down and fawn,
The velvet dusk when day is done;
The vital youth of early spring,
The vivid hues of sunset skies,
The joyousness of birds on wing:—
Of these, are fashioned butterflies.