

PSYCHE.

GROUP CHARACTERISTICS OF SOME NORTH AMERICAN BUTTERFLIES — VI.

BY SAMUEL H. SCUDDER, CAMBRIDGE, MASS.

Tribe EUMAEINI.

Butterfly: Antennae gradually incrassated, the club hardly distinct, tapering apically; last joint of palpi nearly as stout as middle joint; third superior subcostal nervule of fore wings simple; upper of the two veins closing the cell of same obsolete, the lower complete; apical armature of fore tarsi of male the same as in Theclini. Males with no discal patch of special scales. *Egg*: Unknown. *Caterpillar at birth*: Unknown. *Mature Caterpillar*: Cylindrical, the head fully half as broad as the body; highest portions of body occupying the posterior half of each segment; body clothed with hairs the more important of which are clustered upon longitudinal series of fleshy bosses. *Chrysalis*: Dermal appendages composed of equal compressed twisted ribands, tapering only at the extreme tip.

Tribe THECLINI.

Butterfly: Club of antennae distinct, usually unequal throughout; last joint of palpi far slenderer than middle joint; third superior subcostal nervule of fore

wings simple; both of the two veins closing the cell of same subobsolete; last tarsal joint of fore legs of male with a pair of spines differing from the others only in being larger and curved. Males with a discal patch of special scales on fore wings. *Egg*: As much depressed above as truncate below, the micropyllic pit very deep, the central depressed area rarely including as much as half the entire width of the egg. *Caterpillar at birth*: Head noticeably narrower than the body; last three abdominal segments fused. *Mature caterpillar*: Head one third or more the width of the body, highest portion of body segments at or behind the middle, the posterior slope the more abrupt; body coarsely pilose, the hairs longer along the ridges of the body. *Chrysalis*: Dermal appendages consisting of cylindrical equal hairs tapering only at the tip.

Tribe LYCAENINI.

Butterfly: Club of antennae distinct, usually equal throughout; third superior subcostal nervule forked; spines on under side of tarsi comparatively few and ranged in pretty regular series.

Males with no discal patch of special scales. *Egg*: As much depressed above as truncate below, the micropyllic pit relatively shallow, the central depressed area including at least half of the entire width. *Caterpillar at birth*: Head nearly or quite as broad as the body; last two abdominal segments fused. *Mature caterpillar*: Head less than one fourth the width of the body; posterior portions of body segments slightly elevated; body covered with stellate piliferous papillae. *Chrysalis*: Dermal appendages consisting of uniformly tapering cylindrical hairs.

Tribe CHRYSOPHANINI.

Butterfly: Club of antennae distinct, usually equal throughout; third inferior subcostal nervule forked; spines on under side of tarsi numerous and clustered irregularly at the sides. Males with no discal patch of special scales. *Egg*: Domed, much less depressed above than truncate below; angles of cells scarcely or not prominent. *Caterpillar at birth*: Head nearly or quite as broad as body; eighth abdominal segment not fused with others. *Mature caterpillar*: Head one half or nearly one half the width of the body; highest portions of body segments at or in front of the middle of the segments, the anterior slope the more abrupt; body clothed uniformly with short pile, or with longer hairs (sometimes springing from bosses) arranged transversely. *Chrysalis*: Dermal appendages short fungiform.

Subfamily PIERINAE.

Butterfly: Antennae straight. Median nervure of fore wings with three branches; hind wings partially enclosing the abdomen. Fore tibiae with no epiphysis; each of the claws bifid; paronychialia generally present. Usually of medium size. *Egg*: Tall and slender, greatly tapering above and often below so as to have a slender base, vertically ribbed and trellised throughout. *Caterpillar at birth*: Head free with a retro-arcuate posterior dorsal curve. Body cylindrical, with ranged papillae each supporting a single appendage. *Mature caterpillar*: Head free, scarcely if at all smaller than the succeeding segment, with a posteriorly descending surface as in infancy. Body nearly uniform clothed abundantly with small briefly piliferous papillae and generally longitudinally striped; no osmaterialia on thoracic segments. *Chrysalis*: Anterior extremity ending in a single central conical projection thrust some distance in advance of the base of the antennae, and without ocellar protuberances. Dorsal surface of the abdomen ridged, if at all, along the mediodorsal line; *i. e.* single. Girt crossing the middle of the first abdominal segment.

Tribe RHODOCERINI.

Butterfly: Club of antennae gradually incrassated, cylindrical, apically truncate; palpi very short and moderately stout, the apical joint minute; third subcostal nervule of fore wings with a long fork;

precostal nervure of hind wings short or wanting; middle tibiae shorter than the femora in the male; eighth abdominal segment of male posteriorly produced above. *Egg*: Tapering at base almost as much as above, rounded at each end, vertical ribs numerous, slight. *Caterpillar at birth*: Uppermost ranged appendages laterodorsal, conspicuously longest at the extremities of the body. *Mature caterpillar*: Piliferous papillae subequal, or if very unequal the larger arranged on abdominal segments in transverse series. Body moderately stout, tapering forward, the segments divided into six sections, the head smaller than any part of the body. *Chrysalis*: Wing cases decidedly protuberant ventrally, the tongue and antennae not nearly reaching the uncovered part of the abdomen; prominences of body generally rounded, the head well distinguished by its curves from the frontal projection.

Tribe ANTHOCHARINI.

Butterfly: Club of antennae and palpi as in Pierini; third subcostal nervule of fore wing forked near the middle; pre-costal nervure of hind wing straight; middle tibiae shorter than femora; eighth abdominal segment of male posteriorly produced above. *Egg*: Tapering but little below, the base truncate and summit rounded; vertical ribs comparatively few and distinct. *Caterpillar at birth*: Uppermost arranged appendages below the laterodorsal line, all of nearly equal length. *Mature caterpillar*:

Piliferous papillae of unequal size and on abdominal segments the larger arranged only in longitudinal series. Body very slender, scarcely tapering forward, the segments divided into seven sections and the head much broader than high. *Chrysalis*: Wing cases decidedly protuberant ventrally, the tongue and antennae not nearly reaching the uncovered part of the abdomen; prominences of body rounded, the frontal projection often of excessive length with no separate curve from the head.

Tribe PIERINI.

Butterfly: Club of antennae depressed, distinct, subspatulate; palpi very slender, elongate, the last joint long; third subcostal nervule of four wings forked at extreme tip; precostal nervure of hind wings bent strongly outward; middle tibiae at least as long as femora; posterior margin of eighth abdominal segment of male entire or notched above. *Egg*: Tapering but little below, base truncate; summit distinctly truncate, vertical ribs not very numerous, sharp and distinct. *Caterpillar at birth*: Uppermost ranged appendages laterodorsal, all appendages of nearly uniform length. *Mature caterpillar*: Piliferous papillae of unequal size and on abdominal segments the larger arranged only in longitudinal series. Body comparatively stout, scarcely tapering forward, the segments divided into six sections and the head scarcely or not at all broader than high. *Chrysalis*: Wing cases not ventrally

protuberant, the tongue and antennae reaching the uncovered part of abdomen; carinae often raised to sharp projections.

Subfamily PAPILIONINAE.

Butterfly: Antennae more or less arcuate. Median nervure of fore wings with four branches; hind wings not enclosing the abdomen, often plaited on the inner margin. Fore tibiae with a distinct epiphysis on the inner side; each of the claws simple and long; paronychialia lacking. Usually of large size. *Egg*: Spheroidal or oblate spheroidal, at most scarcely higher than broad, generally broader than high, all surface structure, when visible, reticulate. *Caterpillar at birth*: Head with no retroarcuate posterior dorsal curve, but partially covered by a fold of the segment behind. Body more or less angulated at the lateral line with ranged papillae most or all supporting several appendages. *Mature caterpillar*: Head much smaller than the succeeding segments, more or less covered posteriorly, where there is no retroarcuate dorsal curve, by a fold of the segment behind. Body frequently enlarged at the hinder end of the thoracic region, nearly naked or with longitudinally ranged fleshy filaments, or bristly mamillae, occasionally with transversely ranged piliferous papillae; generally transversely marked or saddled with sharply contrasted colors, or where longitudinally marked it is by serial spots and not by stripes; a Y-

shaped osmaterium on first thoracic segment. *Chrysalis*: Anterior extremity ending in a pair of projections—the ocellar prominences—thrust some distance in front of the antennae, or with rounded front not projecting beyond the base of the antennae, occasionally (in exotic types) with a double knob of hooks. Dorsal surface of the abdomen ridged if at all on the laterodorsal line; *i. e.* double. Girt crossing the middle of the metathorax.

Tribe PARNASSINI.

Butterfly: Last joint of palpi long; wings rounded, in our species entire, the subcostal nervure of fore wings with three superior branches.* *Egg*: Very oblate spherical, deeply and profusely punctate. *Caterpillar at birth*: Bristles of body spiculiferous not apically expanded but truncate. *Mature caterpillar*: Body with ranged tubercles bearing bristly hairs or clothed with bristly hairs massed in distinct regions. *Chrysalis*: With no frontal projections, sometimes enclosed in a cocoon, or attached (in Thais) by the anterior extremity.

Tribe PAPILIONINI.

Butterfly: Last joint of palpi minute; wings subfalcate, the hind pair usually tailed, the subcostal nervure of fore wings with four superior branches. *Egg*: Nearly spheroidal, with scarcely

*These characters do not hold for the entire group, outside of America, where it is less developed.

perceptible reticulation. *Caterpillar at birth*: Bristles of body not spiculiferous, apically enlarged or flaring. *Mature caterpillar*: Body naked except for scanty and excessively short almost microscopic hairs, occasionally provided with fleshy filaments. *Chrysalis*: With a pair of frontal projections, hanging freely by tail and mid-girth only.

Family HESPERIDAE.

Tribe HESPERINI.

Butterfly: Tail of antennal club nearly or quite as long as club proper; abdomen generally shorter than hind wings. Males with a costal fold on fore wings concealing special scales, and with a corneous sheath protecting the extended alimentary canal. *Egg*: Sub-spherical, vertically ribbed and cross lined. *Caterpillar at birth*: Bristles of last segment only a little longer than the others, not recurved. *Mature caterpillar*: Body relatively stout and plump; highest points of the two sides of the head more distant from each other than the length of the base of the frontal triangle. *Chrysalis*: Tongue case not protruding beyond the tip of the wing cases.

Tribe PAMPHILINI.

Butterfly: Tail of antennal club shorter than the club proper, occasionally wanting; abdomen as long as or surpassing the hind wings. Males often with a velvety oblique streak on the

disk of the fore wings, the alimentary canal not prolonged. *Egg*: Usually subhemispherical, with smooth or obscurely reticulate surface. *Caterpillar at birth*: Some of the bristles of last segment exceptionally long and recurved. *Mature caterpillar*: Body very elongate; highest points of the two sides of the head no farther apart than the length of the base of the frontal triangle. *Chrysalis*: Tongue case free at tip, protruding beyond the wings.

A SIMPLIFIED SPREADING BOARD.

Some entomological friends who have visited my laboratory recently have been unexpectedly interested in a means of setting and spreading the wings of insects that I have employed for a good while, and have asked that I should describe it. I am constrained to do so, not because the old form of grooved board with cork backing is unsatisfactory, but because my board is simpler, cheaper and can be made in a moment by any one. It is better, too, in some respects and for some kinds of insects, and I now use it almost altogether.

It consists of a thin piece of smooth board of soft wood with rows of awl holes punched through it, fastened flatwise upon another thin board of the same size. That is all there is to it. The piece with the holes in it should be of a thickness equal to one fourth the length of the pin.

To use, the pin is thrust through the insect nearly to the head, inverted, and pushed head downward to the bottom of one of the holes, and the wings are expanded and pinned down under strips of paper in the usual way, but in the inverted position.

Its advantages over the old, grooved board are:—



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