

Tegulae (pterogodes of Latreille; paraptera of McLeay; scapulae of other authors), the triangular scales covering the base of the primaries.

NEW SPECIES OF PRODOXIDÆ.

BY C. V. RILEY.

Upon my return from California in 1887 I gave some account before the Society of the insects associated with *Yucca brevifolia*, the tree yucca of the Mojave Desert, and exhibited specimens of the *Pronuba*, which I found to be associated with the flower of the yucca as its pollenizer. I called attention to its peculiarities and suggested that I would describe it by the specific name of *paradoxa*. Pressure of other work has, up to the present time, prevented my doing so, but in connection with an article which I have recently prepared for the Annual Report of the Missouri Botanical Garden I have characterized the different species of Prodoxidæ. As that publication is not purely entomological in character, I have decided to present the descriptions of the new species to this society for publication.

Pronuba synthetica.—LARVA (Fig. 15, *a*).—Length when full-grown, 14 mm. Somewhat more cylindrical than that of *yuccasella*, the general color being bluish-green tinted with a rosaceous hue; otherwise undistinguishable from those of the other two species.



Fig. 15.—*Pronuba synthetica*: *a*, larva from side; *b*, ♀ chrysalis, ventral view; *c*, do., lateral view—nat. size in hair line; *d*, lateral, *e* dorsal view of anal joints of ♂; *f*, *g*, do. of ♀; *h*, dorsal view of 2d and 3d joints of abdomen—all more enlarged.

CHRYSLIS (Fig. 15, *b, c*).—In size, general shape and arrangement of the spines similar to that of *yuccasella*, but readily distinguished by the wing-sheaths in both sexes reaching only to the sixth abdominal joint and the posterior legs to the seventh, whereas in *yuccasella* the former reach to the eighth and the latter to about the middle of the ninth. The medio-dorsal spines are also longer, more prong-like and less spatulate, while the capitate spine is perhaps less prominent. The difference is more particularly noticeable in the greater length and prominence of the two spines on the second abdominal joint. The anal joint in the male is narrower and comparatively longer, and the two terminal teeth much shorter than in the female, also not so well defined as in *yuccasella*. The anal segment in the female is broader and stouter than in *yuccasella*, with the teeth shorter, stouter and further apart. (*c, d, e, f, g, h.*)

IMAGO (Fig. 16, *a*).—Expanse ♀, 15–20 mm.; ♂, 16–18 mm. Body flattened, piceous. Wings smoky-gray; the scales sparse and as easily lost on the upper surface, especially of primaries, as in the *Sesilidæ*, so

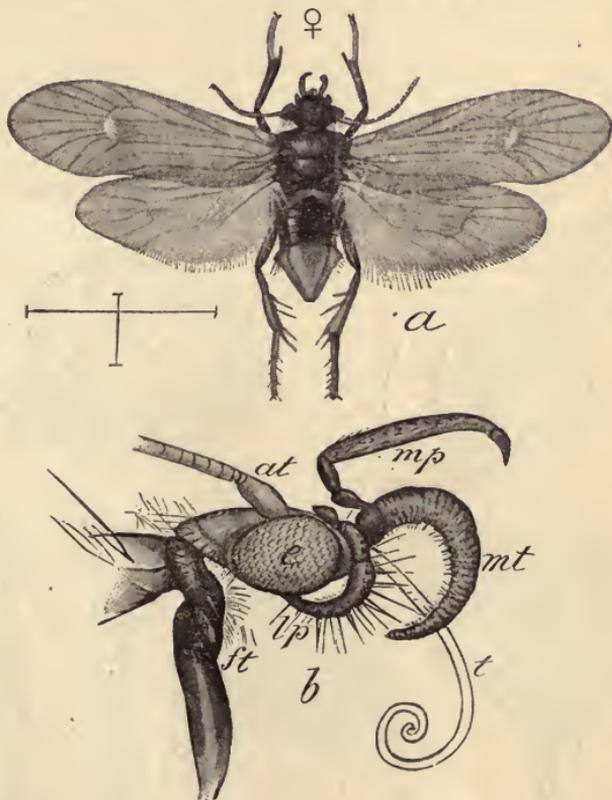


Fig. 16.—*Pronuba synthetica*: *a*, ♀ with wings expanded, hair-line showing nat. size; *b*, lateral view of the head and neck, more enlarged, showing a purely lateral view of the trophi not in pairs to avoid confusion, the maxillary palpus (*mp*) with its tentacle (*mt*); tongue (*t*); labial palpus (*lp*); base of antenna (*at*); eye (*e*); front trochanter (*ft*).

that none but those carefully killed soon after issuing from the chrysalis show the wings well covered. In such specimens the general color is cinereous, the primaries but slightly darker than secondaries, the scales being narrow and elongate; mostly gray, but with an admixture of black ones. The exposed membrane of the wing is fuliginous except a narrow discal space and more or less of the costal region which remain sordid white. Fringes paler but sparse and easily lost except at anal angle of hind wings, where they persist. Veins black and strong. Body but sparsely clothed in freshest specimens and soon becoming bare except at neck; highly polished and minutely punctate, and in some specimens with metallic tendency. *Head* (Fig. 16, *b*) with the hair pale ferruginous; eyes brown, naked; labial palpi brownish-black with sparse white scales; maxillary tentacles stout and brown, shorter than tongue; max. palpi nearly as long as tentacle, basal joint stout, rounded, joints 2 and 3 short, subequal in length, joint 4 very long, terminal joint with two spines at tip; tongue very stout, long and ferruginous; antennæ black. *Thorax* with two singular transverse-ovoid translucent and somewhat opalescent spots recalling the so-called cenchri of Tenthredinids; legs stout and dark, the hind tibiæ and tarsi pale ferruginous. *Abdomen* separated from thorax dorsally by a broad and deep suture which is pale rufous by contrast with the general piceous color; anal joint (Fig. 17, *b*, *c*, *d*) in ♀ rufous, with darker shade at base, the sides compressed from above and expanded into a broad and angulate wing, the borders of which are thickened and stiff-

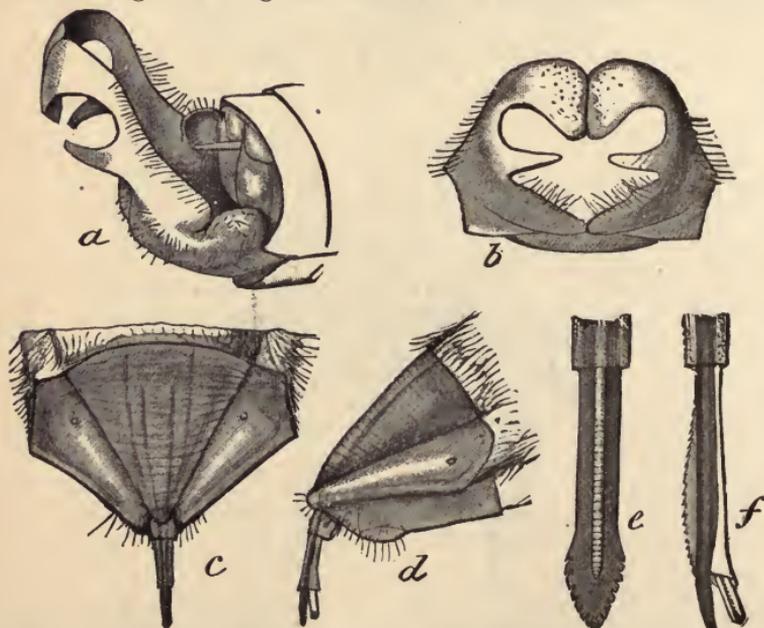


Fig. 17.—*Pronuba synthetica*: *a*, enlarged view genitalia of ♂ from side; *b*, do., from behind; *c*, anal joint of female with ovipositor exerted, dorsal view; *d*, do., lateral view; *e*, ovipositor, dorsal view, still more enlarged; *f*, do., from side.

ened and converge to a rather sharp tip which is, however, obliquely truncate from the side; ovipositor issuing generally at right angles and with the same parts as in *yuccasella* but all stouter and shorter (*e, f*). In the ♂ the dorsal fulvous suture or pit between thorax and abdomen is more profound and concave, the abdomen is less flattened and the claspers are brown, very stout, one-half as long as the abdomen, the basal part broad and leaf-like, the terminal part abruptly curved upward, dilated into a decurved triangular tip, and the prong quite long, slightly curved and denticulate at tip. (*a, b*.)

Described from 28 ♀'s, 10 ♂'s from *Yucca brevifolia*.

This is the third species of *Pronuba* so far known, *P. yuccasella* pollenizing and breeding in the fruit of the different *Yuccas* growing within the United States east of the Rocky Mountains and showing a remarkable uniformity in coloration; *Pronuba*

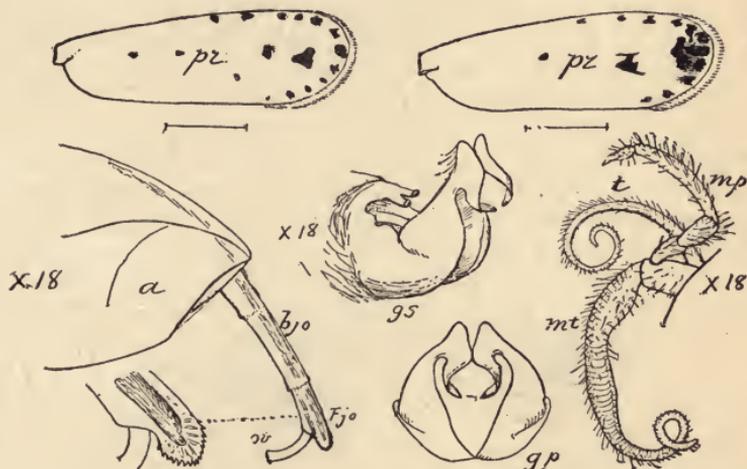


Fig. 18.—*Pronuba maculata*: *a*, tip of female abdomen; *bjo*, basal joint of ovipositor; *tjo*, terminal joint do.; *ov*, oviduct; *imp*, max. palpus; *mt*, maxillary tentacle; *t*, tongue; *gs*, claspers of male from sides; *gp*, do. from front; *pr*, front wings showing arrangement of spots in two of the more common forms—hair line showing nat. size.

maculata (Fig. 18) affecting in a similar way *Yucca whipplei* of California, and showing very great variation in the maculation of the wings. This last is, also, one of the most remarkable of the Lepidoptera, as it is the only species in which the tongue has become so altered as to be scarcely capable of forming a tube, the two parts being very easily separated and covered throughout their length with dense hair.

Prodoxus pulverulentus, n. sp.—IMAGO ♀.—Expanse, 9-10 mm. General color, white; head with the antennæ white, the basal half fuscous;

eyes brown; palpi pale yellowish, hairs white. *Thorax*, with the hair mixed with a few blackish scales; primaries white, more or less densely sprinkled with blackish scales at the posterior third, and sparsely so on the remaining portion. These dark scales produce a powdery appearance of the wings, the amount varying in the specimens before me, there being in two of them but a faint trace of the darker scales; secondaries white, with a broad dusky anterior margin; undersurfaces more densely flecked with blackish scales and hence somewhat darker. *Abdomen* fuscous above, with a few long whitish hairs on the terminal two joints; venter and legs white. Tip of the abdomen shaped as in *P. marginatus*.

I have five specimens of this species, all females, two of them reared from the seed-pods of *Yucca whipplei* in May, 1886, by Mr. Koebele, the pods obtained at Santiago, California, while three specimens were given me by President H. W. Harkness and Mary K. Curran, of the California Academy of Science, in April, 1887, and obtained from the flowers of the same *Yucca*. The adolescent states are still unknown.

Prodoxus y-inversus, n. sp.—IMAGO ♀.—Fig. 19.—Average expanse, 14 mm.; ♂, 10-12 mm. General color white. Head, thorax, legs, and abdomen white beneath, the hairs between the antennæ occasionally yellowish. Eyes black; palpi white; tip of labials yellowish; tongue pale yellowish. Primaries marked with black as follows—a costal streak

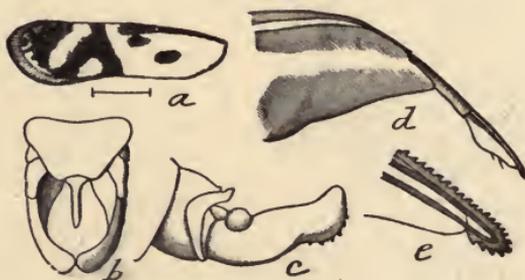


Fig. 19.—*Prodoxus y-inversus*: a, left front wing—hair-line underneath showing natural size; b, genitalia of male, dorsal view— $\times 14$; c, do., lateral view— $\times 18$; d, anal joint of female, with ovipositor exerted, lateral view— $\times 20$; e, tip of ovipositor still further enlarged.

along the basal half, widening somewhat posteriorly and more or less completely fused, with a round spot near its end. An elliptical or roundish spot about the middle of the wing at the basal third; a more or less sharply defined inverted-Y-shaped band across the posterior third of the wing, with its exterior arm generally connected posteriorly with a black patch which extends along the posterior border but is more or less broken at the extreme border, and also along its inner margin. This

terminal dark patch usually broadens toward the apex and is sharply cut off on the costa at about the outer fourth of the wing. Secondaries pale yellowish, darkest at apex; fringes concolorous. Undersurfaces with the dark markings of the primaries less sharply defined. *Abdomen*, brownish above, the male claspers (Fig. 19, *b*, *c*), yellowish-brown, almost bare, quite slender, and gradually narrowing toward the tip, which is almost acute; each arm is provided with 5 or 6 very small, cylindrical, acute teeth at the posterior edge; basal lobes are almost circular and concave at the inner side; upper basal plate triangular. Anal segment of the female obliquely truncate from above, but slightly so beneath, the ovipositor stout, yellowish-brown, its terminal part slender, compressed laterally, the upper edge of the apex being finely and acutely serrate. (Fig. 5, *d*, *e*.)

Described from four males and seven females, no two of which are exactly alike in the marginal details of the inverse Y-shaped band nor in those of the terminal patch.

Specimens of both sexes of this species were reared from parts of a pod of an unknown species of *Yucca* (but doubtless *Y. baccata*) received from Mr. D. C. Chapman, of Washington, D. C., who had obtained them in May, 1883, from New Mexico, the moths issuing during May of the following year. The larvæ infest the fleshy portions of the pod and produce hard, gall-like swellings. The cocoon, which, as with the other species, is constructed within the burrow, is pale brownish, and resembles an elongate, cylindrical bag, rounded at the base and cylindrical at the apex. When ready to transform, the larva retires to the lower third of the bag and separates it from the upper two-thirds by a dense, tough, delicate whitish layer of silk, thus dividing the cocoon into two unequal chambers. No larvæ were preserved, but those which were noticed in cutting open the swellings showed a remarkable resemblance to those of *decipiens*. The chrysalis also has not been studied.

Prodoxus reticulatus, n. sp.—IMAGO.—♀. Expanse, 10–11 mm. (Fig. 20). General color, white. Body with whitish hairs, those of the head inclining to yellowish, intermixed with a few darker hairs, especially

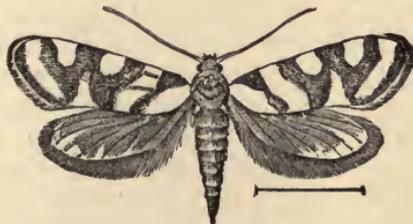


Fig. 20.—*Prodoxus reticulatus*: female with wings expanded—hair-line showing natural size.

around the antennæ; the terminal joint of the palpi pale fuscous; vestiture of the legs superiorly dusky, with a slight cupreous reflection. Primaries with transverse blackish bands as follows: An oblique basal band much constricted at middle so that costal half is usually triangular; a narrow band along the posterior border and the intervening space between these two bands occupied by a broad W-shaped band, the outer arms of the letter running parallel with the basal and terminal bands. Fringes white. Secondaries gray; fringes somewhat darker. Undersurfaces gray, with a brassy reflection, the darker markings of the primaries being but faintly indicated. *Abdomen* with the anal joint perpendicularly truncate, the flexible basal part of the ovipositor rather broad at base and pale, while the terminal part is stout, sharp, and brownish in color.

I have but three females of this species, taken by Mr. Koebele in March at Los Angeles, California, but without any notes of habit.

Prodoxus coloradensis, n. sp.—IMAGO.—♂. Expanse, 11 mm. (Fig. 21). General color, white and somewhat glossy, the hair of the head being faintly yellowish between the antennæ. Eyes black; antennæ white at basal third, the rest fuscous; palpi and tongue pale yellow. A



Fig. 21.—*Prodoxus coloradensis*: a, left front wing—hair-line underneath showing natural size; b, male genitalia, dorsal view— $\times 15$; c, do., lateral view— $\times 18$.

few hairs on the maxillary palpi and the extreme tip blackish. Primaries (Fig. 6, a) with a well-defined band starting at right angles from costa to basal third and then obliquing suddenly though slightly toward base; a somewhat similar band across the middle of the wing obliquing first in the opposite direction, *i. e.*, posteriorly, and then almost parallel with the first band; and a forked or somewhat Y-shaped band across the posterior third of wing; a terminal black border connects with this Y-mark at anal angle but not at apex, and there is more or less black at base of wing. Secondaries whitish above; fringes white. Undersurfaces faintly dusky with a slight æneus reflection and the markings of the primaries less defined than above, and the secondaries somewhat dusky toward the apex. Abdomen brownish with the scales also brownish, especially along the sides, but white beneath. Claspers pale brown, covered with long

yellowish hairs and almost identical in form with those of *y-inversus* (Fig. 7, *b*, *c*).

Of this species I have seen but a single male, taken in 1884, by Mr. Morrison, in Colorado. In general appearance, as well as in the genital characters, it seems to be quite closely related to *P. y-inversus*.

Prodoxus sordidus, n. sp.—IMAGO.—♂. Expanse, 8-10 mm.; ♀, 11-13 mm. General color, creamy-yellow, the females showing the most white. A more or less distinct dusky or blackish posterior margin to the secondaries, the dark color broadening toward the apex. The undersurfaces have a tendency to metallic reflection and the darker color of the hind border of the secondaries is repeated. Abdomen grayish-brown dorsally, with iridescent reflection. Anal segment of ♀ reddish-brown, obliquely truncate from above, the tip rounded. Ovipositor yellowish-brown, slender and finely denticulate along the upper edge. Male claspers similar in shape to those of *decipiens* but more slender, the base comparatively broader and the apex more abruptly rounded; the basal side piece narrower and pointed at tip; the posterior edge with from 3 to 5 small slender teeth.

Described from 5 males and 5 females.

I first found this species in the flowers of *Yucca brevifolia* on the same occasion of the discovery of *Pronuba synthetica*, while other specimens were subsequently obtained by Mr. Koebele. In general appearance the species seems nearest related to *P. cinereus*, being, however, much paler, with the greater portion of the hind wings white.

COLEOPTEROUS LARVÆ WITH SO-CALLED DORSAL PROLEGS.

BY C. V. RILEY.

I have recently received from Mr. D. W. Coquillett, of Los Angeles, California, the larva of *Mordellistena pustulata*, which he found in the dry stalks, apparently of the previous year's growth, of *Xanthium strumarium*, and as they exhibit a peculiarity, viz., the possession of dorsal fleshy processes having the appearance of prolegs which belongs generally to the larvæ of this genus, I have thought it well to exhibit them to the Society, as also some other larvæ which possess similar characteristics. Many of the members will remember that at the 1890 (Indianapolis) meeting of the A. A. A. S., at which I was not present, Prof. H. Osborn read a note (published in the *Canadian Entomologist*, Vol. XXII, 1890, pp.