SYNOPSIS OF PROSOPIS AND COLLETES, WITH SUPPLEMENTARY NOTES AND DESCRIPTIONS.

BY CHARLES ROBERTSON, CARLINVILLE, ILLINOIS.

This paper belongs with the series on local species—Andreninæ, Megachilidæ and Bombinæ, Tr. Am. Ent. Soc., 28: 187; 29: 163; Sphecodinæ, Ent. News, 14: 103; Balictinæ, Nomadinæ, Epeolinæ, Anthophila, CAN. ENT., 34: 245; 35: 172, 284; 36: 37.

For the length of the malar space is taken the shortest distance between the eye and the mandible; the breadth is that of the mandible at base; joint refers to antenna, segment to abdomen; cells III₃ and III₄ are the second and third submarginal cells.

Of 81 specimens formerly referred to *P. modesta*, Say, 45 are referred to *P. Illinoensis*, and 36 to *P. Sayi*, sp. nov. I have given up the attempt to identify *P. modesta*, Say. The type of *P. Sayi* is a pair taken in copula on flowers of *Heracleum lanatum*, June 4, 1888. Both have a dot on tegula.

According to my separation of them, *P. Illinoensis* sometimes has a dot on tegula, and *P. Sayi* often has. The determination of *P. affinis* thus becomes more doubtful than ever. I use the name *P. ziziæ* for the insect I have always called *P. affinis*, Sm.

PROSOPIS, Fabricius.

Females

- Front coxa with a lateral tooth: eyes short; cheeks broad; face marks, tubercles, sometimes two lines on collar, front and middle knees, and base of hind tibiæ, yellow; enclosure of metathorax rugose on basal middle; 6 mmthaspil.
- Front coxa simple; eyes long; cheeks narrow; at least bases of tibiæ yellowish; metathorax usually more rugose.....1.
1. Segment 1 and base of 2 red; face marks, tubercles, and dot on tegulæ, yellow; wings beyond middle clouded; 6-7 mm.....nelumbonis.
- Segments 1-6 black.....2.
2. Collar with yellow marks; tubercles and face marks yellow; 5-6 mm.4.
- Collar black; 4-5 mm.....3.
3. Entirely black, except bases of tibiæ and sometimes narrow lines on face; slender.....saniculæ.
- Clavate face marks present; usually a spot on clypeus, tubercles and tegulæ; a little more robust.....pygmæa.

4. Edge of wing base and spot on tegulæ yellow.....ziziae.
 Edge of wing base black ; tegulæ black ; sometimes with a yellow
 dot5.
5. Metathorax more rugose, more pubescent ; enclosure less distinct,
 bordered by an impressed line, often obscured by the reticulations ;
 face marks more yellow, less produced, more rounded on eye
 margin ; wings more fuscous : flagellum darker ; rarely a dot on
 tegulaIllinoiensis.
- Metathorax less rugose, less pubescent ; enclosure more distinct,
 bordered by a raised line ; face marks paler yellow, more produced
 and pointed on eye margin ; wings more hyaline ; flagellum paler
 beneath ; tegula often with a yellow dot ; *sp. nov.*: 36
 specimensSayi.

Males.

- Front coxa with a lateral tooth ; metathorax moderately rugose ; spot on
 labrum, scape exteriorly, two lines on collar, and tubercles, yellow ; face
 marks somewhat club-shaped on the sides ; 5 mm.....thaspil.
- Front coxa simple ; metathorax more rugose ; at least the face, tarsi,
 anterior tibiæ in front, and middle and hind tibiæ at base,
 yellowish1.
1. Base of abdomen red ; 6 mmnelumbonis.
 Base of abdomen black.....2.
2. Face mark broken into four parts by the irregular encroachment of
 black in the sutures ; elsewhere black, except on the legs ; scape
 broad, clavate ; 4-5 mm.....saniculæ.
 Face mark entire ; tubercles coloured.....3.
3. Lateral extension of face mark usually club-shaped, always diverging
 from eye ; scape exteriorly and sometimes dot on tegulæ pale
 yellowish ; 4 mm.....pygmæa.
- Lateral extension of face mark ending near eye ; usually two lines on
 collar ; 5-6 mm.....4.
4. Scape concave exteriorly ; spot on tegulæ, edge of wing base, labrum,
 mandibles more or less, often the scape exteriorly, yellow ; face
 mark club-shaped laterally ; yellow at base and apex of middle tibiæ
 connected.....ziziae.
- Scape ordinary ; tegulæ, labrum and mandibles rarely with yellow...5.

5. Middle and hind tibiae with a blackish spot behind, hind ones often entirely yellow; segment 1 impunctate; face mark sometimes club-shaped laterally; flagellum darker; tegulae unspotted; wings more fuscous.....*Illinoensis*.
 Middle and hind tibiae yellow at base; segment 1 punctate; face mark pointed on eye margin; flagellum paler beneath; tegulae sometimes spotted; wings hyaline.....*Sayi*.

COLLETES, Latreille.

Females.

- Front coxae with distinct hairy spines; malar space one-fifth to one-fourth as long as wide; 9-11 mm.....8.
 Front coxae without distinct hairy spines.....1.
 1. Thorax above with pubescence ochraceous, not mixed with black; 10-11 mm.....7.
 Thorax above with pubescence griseous, mixed with black.....2.
 2. Ventral segment 6 bicarinate; metathorax rounded, with triangular, rugose reticulated enclosure; joint 3 longer than 4 or 5; malar space one-third as long as wide; 9-11 mm.....*compactus*.
 Ventral segment 6 simple; metathorax truncate, with transverse series of subquadrate pits.....3.
 3. Hind metatarsus about twice as long as broad; clypeus broadly sulcate; labrum concave, striate; joint 3 nearly = 4-5; spurs dark; malar space one-fourth as long as wide; 9-11 mm.....*latitarsis*.
 Hind metatarsus three or four times as long as broad.....4.
 4. Postscutel anteriorly with transverse series of subquadrate pits; rather bare; coarsely punctured; malar space linear; 10-12 mm.....*nudus*.
 Postscutel anteriorly without transverse series of subquadrate pits..5.
 5. Clypeus in profile strongly convex, closely and evenly punctured; joint 3 nearly = 4-5; malar space linear; 9-10 mm.....*brevicornis*.
 Clypeus in profile slightly convex, somewhat sulcate, puncto-striate.6.
 6. Malar space more than one-third as long as wide; clypeus shining, coarsely puncto-striate; front coxae simple; 12-13 mm.....*inaequalis*.
 Malar space hardly one-third as long as wide; clypeus opaque, finely puncto-striate; front coxae with blunt spines; 9-11 mm.....*Willistonii*.
 7. Clypeus opaque, finely punctured, not sulcate; pubescence of mesonotum very fine and dense; abdomen opaque, finely punctured, fasciae very even; nervures pale; malar space about one-fifth as long as wide.....*speciosus*.

- Clypeus shining, coarsely puncto-striate, sulcate; abdomen shining, rather coarsely punctured, fasciæ often obscured by moisture; nervures dark; malar space about one-third as long as wide eulophi.
8. Prothorax with strong lateral spines; pubescence above mixed with black; segment 1 distinctly punctured, extreme sides fasciate, 2 fasciate at base and apex; scutell puncto-striate; malar space short armatus.
- Prothorax without strong lateral spines; pubescence of thorax above not mixed with black 9.
9. Segment 2 rather coarsely punctured; fasciæ narrow; cell III₅ narrowed about one-half above; claws cleft, the divisions nearly equal æstivalis.
- Segment 2 minutely punctured, or impunctate; fasciæ broad; cell III₅ not so strongly narrowed above 10.
10. Wings whitish; pubescence white; inner claw tooth subapical albescens.
- Wings yellowish; inner claw tooth median; hind spur more distinctly pectinate 11.
11. Pubescence ochraceous; cell III₅ little longer than III₄... Americanus.
- Pubescence whitish; cell III₅ longer than III₄; sp. nov similis.

Males.

- Antennæ long, joints much longer than wide 4.
- Antennæ short, joints shorter, or hardly longer, than wide 1.
1. Joint 3 longer than 5; labrum bituberculate; clypeus convex; pubescence pale; malar space linear; 8 mm brevicornis.
- Joint 3 not longer than 5 2.
2. Posterior face of metathorax coarsely, closely, distinctly punctured; abdomen coarsely punctured; labrum with median fovea; joints of antennæ a little longer than wide; flagellum beneath, tarsi, tibiæ more or less and their spurs, testaceous; malar space linear; 11 mm Robertsonii.
- Posterior face of metathorax shining, reticulated, impunctate; abdomen rather finely punctured; malar space more than one-third as long as wide 3.

3. Hind metatarsus about twice as long as broad, with a posterior lobe ;
 clypeus broadly sulcate ; labrum striate ; front femur with long
 white hair ; thorax above mixed with black ; 9-10 mm...latitarsis.
 Hind metatarsus about three times as long as broad ;
 8-9 mmWillistonii.
4. Joint 4 shorter than 2-3, not much longer than 3 ; labrum plane, or
 with a faint fovea ; ventral segments 2-5 strongly bearded laterally ;
 malar space short ; thorax above ochraceous ; cell III₅ short,
 strongly narrowed above.....æstivalis.
 Joint 4 about as long as 2-35.
5. Malar space at least about one-half as long as wide8.
 Malar space not more than one-third as long as wide 6.
6. Postscutel with transverse series of subquadrate pits ; 9 mm...nudus.
 Postscutel densely punctured and pubescent7.
7. Mesonotum rather evenly punctured ; prothoracic spines indistinct ;
 pubescence ochraceous ; 8 mm.....Americanus.
 Mesonotum with two densely punctured submedian streaks ; pro-
 thoracic spines distinct ; pubescence griseous or whitish, usually
 mixed with black on vertex and thorax above ; 8-9 mm..armatus.
8. Metathorax with triangular rugose enclosure ; malar space as long as
 wide ; pubescence mixed with black above ; 9-10 mm..compactus.
 Metathorax truncate ; with transverse series of subquadrate pits ...9.
9. Pubescence of scutel mixed with black ; malar space shorter than
 wide ; 10-12 mm.....inæqualis.
 Pubescence of scutel not mixed with black ; 7-8 mm.....10.
10. Punctures of mesonotum and scutel about equal in size ; malar space
 shorter than wide ; pubescence rather dense, ochraceous ..eulophi.
 Punctures of mesonotum rather fine and sparse, of scutel very coarse ;
 malar space nearly as long as wide ; pubescence thin,
 griseousproductus.
- *Megachile strophostylis*, sp. nov., ♀.—Black ; closely punctured and
 hardly shining ; pubescence rather long and pale ; short, thin and black
 on vertex, mesonotum, scutel, discs of segments 2-5, and base of 6 ;
 lateral ocelli about equally distant from vertex and nearest eye ; mandibles

with four broad teeth ; clypeus short, sparsely punctured, except at base, margin dentate ; mesonotum anteriorly with two oblique lines of whitish pubescence ; segment 1 short, with a broad concavity, 2-5 with unusually broad fasciæ of pale pubescence ; segment 6 very short and broad, a little convex in profile, clothed with long, appressed, glittering, yellowish or whitish pubescence, sometimes blackish at tip ; scopa white, a little fuscous on segment 6 ; hind tibiæ broader than metatarsi ; 12-14 mm. ; 5 specimens.

In the paper on Sphecodinæ, Ent. News, 14 : 103, Stelidium is a slip of the pen for Sphecodium.

Andrena polemonii belongs to Ptilandrena.

BOOK NOTICE.

INSTINCT AND INTELLIGENCE IN THE ANIMAL KINGDOM.—A Critical Contribution to Modern Animal Psychology, by Eric Wasmann, S. J. (Authorized Translation of the Second and Enlarged Edition).—B. Herder, St. Louis, Mo.

This is a book which ought to be read by every scientist for the clear insight which it gives into the dangers of drawing rash conclusions. Wasmann excels in clearness of thought, but most of all for his insistence upon accuracy in using terms. He gives the clearest definition of "instinct" we have ever met with. It is short, but full : "Instinct is a sensitive impulse to actions that are unconsciously adaptive" ; or, more fully, "A sensitive impulse which induces a being to perform certain actions, the suitableness of which is beyond the perception of the agent that performs them," while "intelligence" is the "power of formal conclusion." Again, he says, "there is a power of sensitive cognition which guides instinctive actions belonging to the exterior senses, and there is also an interior sense which perceives the interior state of the agent and feels the pleasant or disagreeable impression which the object of the exterior sense-perception makes upon it ; hence we must add the power of sensitive imagination, and a sensile memory which reproduces exterior sense-perceptions and interior sensile feelings, and combine them, one with another, and with new sense-perceptions according to the nature