

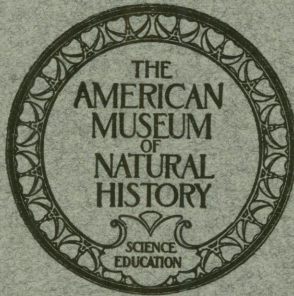
AMERICAN MUSEUM NOVITATES

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SOME PARASITIC MEGACHILID BEES OF  
THE WESTERN UNITED STATES

By T. D. A. COCKERELL



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## SOME PARASITIC MEGACHILID BEES OF THE WESTERN UNITED STATES

By T. D. A. COCKERELL

The fauna of the Western United States, especially that of the Rocky Mountain and Pacific Coast Regions, when fully known, will doubtless furnish many valuable clues to aid in solving the perplexing problems of geographic distribution in North America. As still further collecting is desirable before the final report of the American Museum's expeditions is published, the following notes on the parasitic megachilid bees thus far obtained are presented at this time. The specimens were collected by Dr. Frank E. Lutz, except where otherwise noted, and the field notes are by him.

### *Cœlixys* Latreille

#### *Cœlixys deplanata* Cresson

UTAH: 1 ♀, Huntsville (a few miles east of Ogden), July 26, 1920; 3 ♀, near Fort Douglas, Salt Lake City, about 5000 ft. alt., July 28, 1920. COLORADO: 1 ♂, hair of face pure white, Palisades, near Grand Junction, about 4750 ft. alt., at *Melilotus alba*, July 18, 1919; 1 ♀, Wray, about 3700 ft. alt., August 17, 1919; 1 ♂, large, hair of face creamy white, lower apical spines of abdomen very stout; Regnier, south of Lamar, about 4400 ft. alt., June 8, 1919. All of these specimens were found in quite xerophytic situations.

#### *Cœlixys novomexicana* (Cockerell)

ARIZONA: 1 ♀, Lowell Ranger Station, about 2700 ft. alt., August 18, 1916; 2 ♂, Sabino Basin, about 3800 ft. alt., July 10, 1916; 1 ♂, Mud Springs, about 6500 ft. alt. All of these localities are in the Santa Catalina Mts. along the Sabino trail from Tucson to Mt. Lemon. Mud Springs is rather high in the oak-pinyon environment; the Sabino Basin presents a variety of conditions within a small area but chiefly xerophytic; the country at Lowell is desert—the lower part of the Upper Bajada (Shreve's nomenclature)—but the Sabino River and a water hole introduces more mesophytic vegetation.

The male is new. It runs in my table (1912, Canadian Ent., XLIV, p. 168) of males to *sayi*, from which it is known by the two spots of pubescence on the anterior part of the mesothorax and by the entirely red femora. The Sabino Basin specimens differ in having the first recurrent nervure received at the extreme base of second submarginal cell, almost meeting the transverse cubital. They are also a little smaller.

***Cœlixys octodentata* Say**

(= *altilis* Cresson)

UTAH: 1 ♀, Ogden, about 4350 ft. alt., August 30, 1916. COLORADO: 2 ♀, Wray, about 3700 ft. alt., along Dry Willow Creek, August 18, 1919. INDIANA: 1 ♀, Lafayette, August 16, 1920. Even the western specimens came from moderately mesophytic situations along streams.

***Cœlixys modesta* Smith**

INDIANA: 1 ♀, Lafayette, August 16, 1920. A variety with dark legs and nervures.

***Cœlixys apacheorum* Cockerell**

COLORADO: 1 ♀, between Boulder and Orodell along the rather mesophytic canyon bottom, about 5600 ft. alt., August 11, 1919.

Described from New Mexico.

***Cœlixys rufitarsis* Smith**

UTAH: 1 ♀, 3 rather small ♂, Ogden, about 4350 ft. alt., August 30, 1916; 1 ♂, Huntsville (a few miles east of Ogden), July 26, 1920; 1 ♀, Provo, about 4500 ft. alt., in an irrigated field, July 31, 1920. COLORADO: 1 ♀, Palisades, near Grand Junction, about 4750 ft. alt., July 18, 1919; 1 ♀, 1 ♂, Rifle, about 5400 ft. alt., July 19, 1919; 1 ♀, from a vacant lot in Pueblo, August 9, 1920.

***Cœlixys ribis* Cockerell**

WYOMING: 1 ♀, Jackson, about 6300 ft. alt., among aspens and various plants of a moderately moist pasture-land type, July 15, 1920. COLORADO: 1 ♂, Ouray, about 8500 ft. alt., among Douglas spruce, aspen, scrub-oak, etc., July 11, 1919; 1 ♀, August 7, 1920, and 1 ♂, August 1, 1919, Tennessee Pass, about 10,400 ft. alt., in the lodge-pole pine area; 1 ♀, 1 ♂, Leadville, about 10,200 ft. alt., collected in the town by Mr. H. F. Schwarz.

***Cœlixys porteræ* Cockerell**

COLORADO: 1 ♀, between Aspen and Highland along Castle Creek, about 8500 ft. alt., oaks, aspens and a few spruce, collected by Mr. H. F. Schwarz, July 25, 1919; 1 ♀, Glenwood Springs, about 5800 ft. alt., oak, squaw-bush, sunflower, etc., collected by Mrs. F. E. Lutz, August 5, 1920, 1 ♀, Boulder, about 5500 ft. alt., in town, August 8, 1919.

This was described as a possible variety of *lucrosa* Cresson but the transverse channel on the second abdominal segment is deep and entire, whereas, according to Sladen, it is widely interrupted in *lucrosa*. The type locality of *lucrosa* is New York State.

***Cœlixys texana* Cresson**

INDIANA: 1 ♂, Lafayette, August 16, 1920.

***Cœlixys edita* Cresson**

COLORADO: 1 ♂, Meeker, about 6200 ft. alt., at *Grindelia serrulata*, July 21, 1919.

Crawford has suggested that this is a synonym of *deplanata*. I am able to recognize some differences, and for the present must regard *edita* as valid.

***Cœlixys sayi* Robertson**

INDIANA: 1 ♂, Lafayette, August 16, 1920.

The form from Virginia which I had regarded as *sayi* has longer axillar spines, the abdomen with larger and sparser punctures, and the last dorsal segment more produced. It is certainly distinct. Robertson's name *sayi* must be considered as based on Say's *octodentata* variety  $\alpha$ . "Spots and lines of the thorax [i. e., of white pubescence] obsolete; feet, excepting the tarsi, black." The Virginia insect has the spots and lines present, but the clypeus is bilobed. The last dorsal segment is more produced than in *octodentata*. The femora are black with red knees, tibiæ red stained with black, tarsi reddish basally, apically black, the hind pair black from end of basitarsi on. This may accordingly be separated as:

***Cœlixys mendacina*, new species**

TYPE: ♀. Falls Church, Virginia, June 2, (N. Banks). Length a little over 9 mm. The male (length, 8.2-9 mm.) is indicated in the table below.

It is quite likely that Say mixed more than one species, even under his variety  $\alpha$ ; but Cresson's description of *octodentata* (1864) which Robertson cites under *sayi*, disagrees in saying that the legs are ferruginous, "the coxæ and sometimes the femora and tibiæ more or less blackish." The Lafayette *sayi* agrees with Crawford's statement that the clypeus is bilobed as viewed from above, not truly emarginate. It seems reasonable to take the Indiana form as true *sayi*, but the whole matter is perplexing. The male of *sayi*, according to Robertson, has the legs black, the tibiæ and tarsi more or less tinged with red.

***Cœlixys fragariæ* Cockerell**

COLORADO: 1 ♂, Meeker, about 6200 ft. alt., along the river bank, July 21, 1919.

I give a new description from the Colorado specimen, as the original account was rather brief.

♂.—Length, about 11 mm., slender; black, including tarsi, mandibles and antennæ, but tegulæ red; face densely covered with pure white hair, but on cheeks it is thinner, not wholly hiding surface, but with no smooth space; eyes grayish, with moderately long hair; third antennal joint shorter than fourth; mesothorax and

scutellum densely and very closely punctured, the mesothorax with a median longitudinal depression; anterior margin of mesothorax with a pair of conspicuous white hair-spots; bands of white hair behind mesothorax and scutellum; scutellum with very large punctures, no apical projection; axillary teeth long and somewhat curved; wings dusky hyaline, broadly infuscated apically; stigma ferruginous, nervures fuscous; basal nervure falling a little short of transverse median; recurrent nervures joining second submarginal near apex and base; spurs red; abdomen shining, with strong sparse punctures; first segment with basal and apical white bands, band on basal segment interrupted in middle, the others with successively weaker white bands, but strong bands of white hair in the transverse sulci, broadly interrupted on second, successively less interrupted on the following segments, and nearly entire on the fifth; sides of second segment behind sulci with large opaque areas but no foveæ; fifth segment without distinct lateral spines, sixth with slender lateral spines and six apical ones, the upper apical being each divided into two sharp spines; fourth ventral segment with two sharp spines on margin.

By the two spines on the fourth ventral this falls next to *C. erysimi* Cockerell, which is very closely related. *C. erysimi* has black tegulæ. *C. quercina* Cockerell is of the same group, but the legs are largely bright ferruginous. For other distinctions see Canadian Entomologist, June 1912.

#### ***Cœlixys aperta* Cresson**

COLORADO: 1 ♂, Meeker, about 6200 ft. alt., at *Grindelia serrulata*, July 21, 1919.

*C. aperta* was based on a single female collected by Morrison in Colorado. The male before me may I think be safely referred to the same species.

♂.—Length 10 mm.; black, including antennæ, mandibles and tarsi, the tegulæ very obscurely reddish in middle; face, front and cheeks densely covered with long pure white hair; cheeks beneath with a small inconspicuous bare area; third antennal joint longer than fourth; eyes pale green, with moderately long hair; mesothorax and scutellum coarsely and densely punctured, scutellum with a median projection; axillary spines very long, sharp, wings brownish, stigma and nervures dark; basal nervure meeting transverse median; first recurrent nervure joining second submarginal cell nearer base than second to apex; anterior coxæ spined; abdomen with very broad pure white hair-bands on segments 1 to 5; no white hair at bases of segments or in sulci; second segment strongly punctured, without foveæ; sides of fifth with short spines; sixth segment short, with long curved lateral spines and four short apical ones, the upper very broad; venter with broad, dense, white hair-bands.

On account of the median projection on scutellum, this falls next to *C. germana* Cresson and *C. totonaca* Cresson. For the distinctions see Psyche, October 1905, p. 89.

#### ***Cœlixys lucrosa* Cresson**

COLORADO: 2 ♂, Telluride, along the trail near Cornet Creek at about 10,000 ft. alt., chiefly aspen following cut-over spruce; July 9, 1919; 1 ♂, Boulder, about 5500 ft. alt., at *Grindelia* in town, August 8, 1919.

Cresson described *C. lucrosa* from the female, collected by Comstock in New York State, and by Morrison in Colorado. I have never found the female in Colorado. Sladen (Canadian Entom., June 1915) gave characters for both sexes. The males recorded above agree with his account of male *lucrosa*, and are referred there. I give a description from a Telluride specimen.

♂.—Length about 9 mm.; black, including tarsi, mandibles, antennæ and tegulæ; face with long white hair, faintly tinged with creamy; cheeks with thin hair, and a large smooth space below; third antennal joint longer than fourth; eyes gray, with moderately long hair; mesothorax and scutellum strongly punctured, but disc of mesothorax shining between punctures; scutellum simple; axillary teeth short, triangular, wings hyaline, broadly dusky apically; stigma ferruginous, nervures fuscous; basal nervure falling short of transverse median, second submarginal cell receiving recurrent nervures about equally distant from base and apex respectively; spurs red; abdomen shining, sparsely punctured, with pure white hair-bands on apices of segments 1 to 4, broad at sides but very thin in middle; sulci without hair, interrupted in middle; foveæ on second segment large and elongate; fifth segment with short stout lateral spines; sixth with long sharp ones; apex of sixth with four spines, the lower ones long and slender; margin of fourth ventral segment in middle smooth and reddish.

#### *Cœlioxys lutzii*,<sup>1</sup> new species

УТАН: 1 ♀ (the type), Ogden, about 4400 ft. alt., in the Ogden canyon near "Pine View," mesophytic situation along the stream, August 29, 1916. WYOMING: 1 ♂, Jackson, about 6300 ft. alt., aspens and various plants of a moderately moist pasture-land type, July 15, 1920. COLORADO: 1 ♂, at about 37° 27' N., 106° 54' W. in Mineral county near Wolfand Fall Creeks along the road across the continental divide, oak, Engelman spruce, etc., June 20, 1919.

♀.—Length, 10.5 mm.; black, including tarsi, tegulæ, antennæ and mandibles; head and thorax with dull white hair, abundant on thorax behind; clypeus normal, minutely and densely punctured, with some large punctures interspersed; eyes gray, with short hair; third antennal joint nearly as long as fourth; mesothorax and scutellum very densely and coarsely punctured; scutellum simple; axillary spines short, thornlike, curved; wings dusky hyaline, stigma and nervures dark; first recurrent nervure joining second submarginal farther from base than second from apex; basal nervure meeting transverse median; second submarginal cell very broad on marginal cell; spurs black; abdomen shining, sparsely punctured; white hair-bands on apices of segments 1 to 4, broadly interrupted on first; no white hair in sulci; sulcus on second segment entire, the region behind it in middle very sparsely punctured; last dorsal sharply pointed, keeled its whole length, not abruptly narrowed at sides; last ventral considerably longer than last dorsal, narrow, minutely notched on each side before apex; third ventral segment strongly punctured, but with a median oval smooth space in which is a small tubercle; last ventral closely punctured.

<sup>1</sup>Named after Dr. Frank E. Lutz, the leader of the Rocky Mountain Expeditions, which will enormously increase our knowledge of western entomology when the rich materials have been sorted and recorded.

♂.—Length about 9 mm.; face with long white hair; third antennal joint quite as long as fourth; large irregular punctures in middle of mesothorax, with a little shining surface showing between; cheeks with a smooth space below; anterior coxæ spined; abdomen shining, sparsely punctured, with entire pure white bands on apical margins of segments and white hair at base of fifth and sixth, second segment with small foveæ; sides of fifth with very short spines, of sixth with long ones; apex of sixth quadridentate, all the teeth rather slender, the upper ones divergent, the lower forming a U; fifth ventral segment depressed and shining in middle.

The female runs to *C. mæsta* Cresson in Crawford's table, but it differs in the color of the tegulæ and the shining area on under side of abdomen. The male is known from *mæsta* by the character of the foveæ on second abdominal segment.

#### ***Cœlioxys mesæ*, new species**

COLORADO: 1 ♂, on the Chapin mesa at about 37° 12' N., 108° 29' W. in the Mesa Verde National Park, pinyon, Sabina, sagebrush, etc., at the flowers of *Pentstemon coloradensis*, July 5, 1919.

♂.—Length about 10 mm., robust; black, including legs, mandibles and antennæ; tegulæ dark reddish, head broad, face with long white hair, cheeks little hairy, densely and coarsely punctured, with a smooth space on extreme lower part; third antennal joint slightly longer than fourth; eyes pale green, with moderately long hair; mesothorax and scutellum densely, coarsely punctured; margin of scutellum simple; axillary spines rather long; wings brownish hyaline, stigma clear ferruginous, nervures fuscous; basal nervure meeting transverse median; second submarginal cell receiving first recurrent nervure nearer base than second recurrent nervure from apex; anterior coxæ with very stout spines; spurs dark red; abdomen closely punctured, the second and third segments dull and densely punctured, with strong entire transverse sulci, which are not hairy; hind margins of segments 1 to 4 with white hair-bands, and white hair also at bases of 4 and 5; first segment also with a broad basal hair-band, so that not much of its upper surface is exposed; fifth segment with short stout lateral teeth, sixth with long but obtuse ones; apex of sixth with four teeth, the upper two more divergent than the lower; lower rather short; venter closely punctured, segments 2 to 4 with broad white hair-bands.

Especially known by the sculpture of the abdomen.

#### ***Cœlioxys lamellicauda*, new species**

COLORADO: 1 ♂, Meeker, about 6200 ft. alt., collected in the school grounds by Mr. Pearce Baily, Jr., July 21, 1919.

♂.—Length about 9 mm.; black, including mandibles, tarsi, antennæ and tegulæ; face and cheeks with dense pure white hair, cheeks with groove below; third antennal joint longer than fourth; eyes gray, with short hair; mesothorax and scutellum densely punctured; scutellum simple; axillary spines long; wings hyaline, dusky apically, stigma dark reddish, nervures fuscous; basal nervure meeting transverse median, second submarginal cell receiving first recurrent nervure nearer base than second recurrent nervure from apex; anterior coxæ with very stout spines; spurs red; hind margins of abdominal segments with broad entire hair-bands; first



segment also with a basal band; no hair in the sulci, which are entire on segments 2 and 3; segment 2 with small shining spaces but no foveæ; sides of fifth segment with very short teeth, of sixth with long ones; apex of sixth with four teeth, the upper ones very broad and obtuse, strongly divergent; venter with entire white hair-bands.

Especially known by the shining areas (but no foveæ) on second abdominal segment, and lamelliform upper apical teeth.

The above *Calioxys* may be separated by the following key.

1. Females.....2.  
Males.....12.
2. Legs red; eyes with short hair.....3.  
Legs mainly or wholly black, or only tarsi red.....5.
3. Last ventral segment very broad; margin of clypeus entire... *deplanata* Cresson.  
Last ventral segment rather narrow.....4.
4. Over 12 mm. long; clypeus deeply notched or bilobed... *novomexicana* Cockerell.  
Under 10 mm. long; clypeus ordinary..... *octodentata* Say.
5. Last ventral broad, entire, without lateral notches.....6.  
Last ventral notched at sides.....7.
6. Axillary spines short; last ventral very broad, with an apical point.  
*modesta* Smith.  
Axillary spines long; last ventral without a salient apical point.  
*apacheorum* Cockerell.
7. Last dorsal with salient lateral angles, or abruptly notched... *rufitarsis* Smith.  
Last dorsal without such angles.....8.
8. Last ventral broad, with strongly convex margins before the long apical projection (see figure in Canadian Entom., July 1915, p. 205); hair on eyes long..... *ribis* Cockerell.  
Last ventral without strongly convex sides.....9.
9. Conspicuous white hair-markings on thorax above; clypeus bilobed or broadly emarginate, with dense pure white hair filling space between clypeus and mandibles; angle formed by emargination of clypeus less acute than in *novomexicana*..... *mendacina* Cockerell.  
No conspicuous white hair-markings on thorax above.....10.
10. Last ventral very narrow; third ventral with a median polished oval impunctate space..... *lutzi* Cockerell.  
Last ventral not so narrow; third ventral without a specialized area.....11.
11. Tegulæ clear bright ferruginous; hair of eyes very short..... *sayi* Robertson.  
Tegulæ dark rufopiceous; hair of eyes much longer..... *porteræ* Cockerell.
12. Legs at least mainly red.....13.  
Legs red, coxæ and under side of femora black; second abdominal segment with small foveæ; hair of eyes short; hair of face pure shining white; cheeks with a large bevelled hairless space; apex of sixth abdominal segment quadridentate, the upper teeth strongly diverging... *mendacina* Cockerell.  
Legs mainly or wholly black.....16.
13. Mesothorax with large well-separated punctures on disc; tegulæ bright ferruginous; end of abdomen multidentate..... *texana* Cresson.

- Mesothorax very densely punctured; conspicuous light hair in scutello-mesothoracic suture . . . . . 14.
14. Second abdominal segment with a pair of small oval foveæ on a smooth surface.  
*novomexicana* Cockerell.
- Second abdominal segment without such foveæ . . . . . 15.
15. Larger; abdomen more coarsely and less densely punctured; first recurrent nervure joining second submarginal cell as far from base as second from apex . . . . . *deplanata* Cresson.
- Smaller; abdomen more finely and closely punctured; first recurrent nervure joining second submarginal cell very near base, or even meeting first transverse cubital . . . . . *edita* Cresson.
16. Scutellum with a median apical tubercle; lower apical teeth of abdomen divergent; tegulæ almost pure black; hair of eyes long . . . . . *aperta* Cresson.
- Scutellum without a median tubercle . . . . . 17.
17. Conspicuous light hair in scutello-mesothoracic suture; apex of sixth abdominal segment with six teeth; fourth ventral with two sharp spines on margin.  
*fragariæ* Cockerell.
- No conspicuous sutural hair or spots on thorax above; tegulæ black or dark reddish . . . . . 18.
18. Tarsi red . . . . . *rufitarsis* Smith.
- Tarsi black, lower apical teeth of sixth segment parallel or almost . . . . . 19.
19. Stigma ferruginous; first recurrent nervure going only a little beyond first transverse cubital; second abdominal segment dull and very densely punctured . . . . . *mesæ* Cockerell.
- First recurrent nervure going considerably beyond first transverse cubital; stigma often piceous . . . . . 20.
20. Rather large and robust; second abdominal segment behind the sulcus very densely and finely punctured, without foveæ; hair of eyes very long.  
*ribis* Cockerell.
- Smaller or more slender; second abdominal segment otherwise . . . . . 21.
21. Second abdominal segment with large transverse foveæ; axillary spines very short; apex of fourth ventral abdominal segment produced, smooth, bare and red; transverse sulcus on second abdominal segment interrupted; second submarginal cell on marginal hardly or not longer than first transverse cubital . . . . . *lucrosa* Cresson.
- Second abdominal segment with foveæ minute or absent . . . . . 22.
22. Axillary spines long; second segment with a pair of shining spaces but no foveæ . . . . . *lamellicauda* Cockerell.
- Axillary spines very short; second segment with small elongate-punctiform foveæ; second submarginal cell on marginal considerably longer than first transverse cubital; transverse sulcus on second abdominal segment entire.  
*luzzi* Cockerell.

The host-relationships of the American *Cælioxys* are little known. Grænicher found *C. rufitarsis* Smith parasitic on *Megachile melanophæa* Smith and *M. latimanus* Say. He found *C. lucrosa* Cresson or a closely related species parasitic on *M. addenda* Cresson. In Europe there are records of *Cælioxys* parasitic on *Anthophora*, but they need confirmation.

According to the statements of Alfken (Die Bienenfauna von Bremen), the species of *Cælioxys* do in some cases live on more than one species of *Megachile*, but they are by no means indiscriminate. Thus we have:

Parasite	Host
<i>C. aurolimbatus</i> Först	<i>Megachile ericetorum</i> Lepeletier
<i>C. trigonus</i> Schrank	<i>M. maritima</i> Kirby
<i>C. quadridentatus</i> Linnæus	<i>M. circumcincta</i> Kirby and <i>M. willughbiella</i> Kirby
<i>C. acuminatus</i> Nylander	<i>M. centuncularis</i> Linnæus (probably)
<i>C. mandibularis</i> Nylander	<i>M. argentata</i> Fabricius
<i>C. rufocaudatus</i> Smith	<i>M. rotundata</i> Fabricius

Bingham, in India, observed that *C. basalis* Smith lived in nests of *M. lanata* Fabricius. As *Cælioxys* is world-wide, one might expect to find the number of species roughly proportioned to that of *Megachile*. In Australia, however, the forms of *Megachile* are excessively numerous and varied, but there are only four *Cælioxys* (*albiceps* Friese, *reginæ* Cockerell, *albolineata* Cockerell, *froggatti* Cockerell). It seems probable that the genus originated in the Western Hemisphere; it is especially abundant in the Neotropical Region, with 110 species described up to the present time.

In the Nearctic Region, the species seem to be usually restricted, or nearly restricted, to a single province, as we find with other bees. *C. lucrosa* Cresson and *sodalis* Cresson are reported from New York to Colorado; *C. rufitarsis* Smith is similarly widely distributed in the Northern part of the continent and the western mountains. *C. octodentata* Say, *mæsta* Cresson and *porteræ* Cockerell also extend from the Atlantic coast region to the Rocky Mountains. Presumably these all infest the wide-spread species of *Megachile*, whereas the more local ones parasitise the local species of the host-genus. *C. fragariæ* Cockerell was described from an altitude of 6000 ft. on the San Jacinto Mountains of California; it now turns up at about the same altitude in Western Colorado.

The Nearctic *Cælioxys* at the present time number 52 species and six races or varieties. Of these, nine (*edita* Cresson, *insita* Cresson, *scitula* Cresson, *texana* Cresson, *hunteri* Crawford, *piercei* Crawford, *arenicola* Crawford, *asteris* Crawford, *pratti* Crawford), were described from Texas, whence *edita* and *texana* extend northward. A race of *texana* (*sonorensis* Cockerell) occurs at San José de Guaymas, Mexico. Ten (*menthæ* Cockerell, *gilensis* Cockerell, *porteræ* Cockerell, *apacheorum* Cockerell, *grindeliæ* Cockerell, *ribis* Cockerell, *soledadensis* Cockerell, *texana vegana* Cockerell, *rufitarsis rhois* Cockerell, *novomexicana* Cockerell) were

described from New Mexico. Of these *porteræ* extends to Virginia, and *ribis* has been taken by Grænicher in Wisconsin and by Sladen in Ontario. *C. apacheorum* is now recorded from Colorado.

Six (*coquilletti* Crawford, *angelica* Cockerell, *fragariæ* Cockerell, *hirsutissima* Cockerell, *megatricha* Cockerell, *angulifera* Cockerell) have been described from California. Of these, *fragariæ* extends eastward to Colorado. Four (*floridana* Cresson, *slossoni* Viereck, *obtusiventris* Crawford, *dolichos* Fox), have been described from Florida. *C. quercina* Cockerell is from Arizona; *C. ribis kincaidi* Cockerell is from Washington State; *C. aperta* Cresson, *coloradensis* Cresson, *erysimi* Cockerell, *deani* Cockerell, *grindeliiæ denverensis* Cockerell and *crassula* Cockerell are from Colorado. *C. deplanata* Cresson occurs from Kansas to Utah and Washington State.

The remaining species are from the eastern and northeastern States, viz. *rufitarsis* Smith, *funeraria* Smith (Can.) *modesta* Smith, *octodentata* Say *alternata* Say, *sayi* Robertson, *rufitarsis melanopoda* Viereck, *germana* Cresson, *lateralis* Cresson, *lucrosa* Cresson, *mæsta* Cresson, *sodalis* Cresson (also Colo.), *comstockii*, Cresson (N. Y.), *immaculata* Cockerell (Ind.), *sculptifrons* Crawford (N. Y.), *banksi* Crawford (Va.), Robertson found seven species in Illinois (*sayi*, *modesta*, *germana*, *alternata*, *texana*, *rufitarsis*, *octodentata*).

There are in addition one new species from Virginia, one from Utah, Colorado and Wyoming, and two from Colorado, described above. It will be seen from the above that most of the records come from a few States, and there are many parts of the country from which the *Cælixys* are unknown.

#### CHELYNIA Provancher

##### *Chelynia elegans* (Cresson)

COLORADO: 5 ♀, Ward, about 9300 ft. alt., near town, August 8, 1919.

##### *Chelynia monticola* (Cresson)

IDAHO: 1 ♀, Bear Lake, along Fish Haven Creek at about 6200 ft. alt., July 9, 1920; 1 ♀, Giveout near Montpelier, about 6700 ft. alt., July 7, 1920; WYOMING: 3 ♀, Jackson, along Cache Creek from 6300 to 7000 ft. alt., July 15, 1920.

##### *Chelynia submarginata* (Cresson)

IDAHO: 1 ♀, Bear Lake, along Fish Haven Creek at about 6200 ft. alt., July 9, 1920, collected by Mrs. F. E. Lutz. WYOMING: 1 ♀, 1 ♂, Jackson, along Cache Creek, at about 6300 ft. alt., July 15, 1920; collected by Mrs. F. E. Lutz. COLORADO: 1 ♂, Telluride, along the trail near Cornet Creek at about 11,000 ft. alt., July 9, 1919; 1 ♂, South Fork, about 37° 40' N., 106° 38' W. and 8200 ft. alt., June 17, 1919;

2 ♀, 2 very small ♂, Camp Creek Ranger Station at about 41° N., 106° 12' W., and 8700 ft. alt., July 19, 1921. All of these places are quite mesophytic, the Idaho one being the nearest approach to desert conditions. The specimens from Telluride and Camp Creek were taken not far from still-remaining snow.

The males are very variable in size but appear to represent a single species.





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FRANK E. LUTZ, Editor

**I**ssued, as occasion requires, for the publication of preliminary announcements, descriptions of new forms, and similar matters.

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