

Flower and Insect Records from New Mexico.

By T. D. A. COCKERELL. 1901

The following records are offered as a contribution to the knowledge of the relations between insects and flowers. It is perhaps hardly necessary to say that in New Mexico this subject is a new one, and there is no part of the Territory where half an hour's observations at the right season will not yield unrecorded facts. Unfortunately, however, this ease in making new observations goes with the greatest difficulty in getting them recorded, for the reason that both flowers and insects are imperfectly understood, and in many cases only identified by the expenditure of much time, or through the assistance of specialists. Even many of the conspicuous roadside flowers have lately proved to be undescribed, and there still exists an uncomfortable possibility that several of the now-accepted names may require revision, although they are endorsed by the best authorities.

A being from another planet, after visiting one of our great city markets, might be so impressed by the variety of foods offered for sale as to report that mankind ate everything, was literally omnivorous. So a casual observer of the habits of insects might infer that they visited all sorts of flowers, and that it was useless to make records of flower-visits. Close study, however, shows us that this is far from being the case, and even those species which visit many kinds still have preferences and their aversions. At the same time it must not be inferred in any case that the insects reported to visit a flower are the only ones visiting it; for setting aside those which may have been collected but not yet identified, no flower has yet been watched sufficiently for us to make an exhaustive list of its insect-visitors.

COMMELINACEÆ.

Commelina dianthifolia D. C.—Visited by *Bombus prunellæ* Ckll.

IRIDACEÆ.

Iris missouriensis Nutt.—Visited by *Bombus iridis* Ckll. and Porter, *B. ternarius* Say, and *B. juxtus* Cress.

SALICACEÆ.

- Salix* sp., at Mesilla, May 4, 1897 (Ckll.). The following bees at the ♂ flowers: *Prosopis mesillæ* Ckll., ♀; *Perdita salicis* Ckll., ♂ ♀; *Halictus subobscurus* Ckll., ♀.
- Salix* sp., at Las Vegas Hot Springs, 1899 (Wilmatte Porter). Hym.: *Andrena porterae* Ckll., ♀.
- Salix* sp., at Beulah, Sapello Canon, May 30th (Wilmatte Porter). Hym.: *Andrena sapellonis* Ckll.; *Halictus armaticeps* Cr., ♀; *Osmia faceta* Cr., ♂.

CHENOPODIACEÆ.

- Atriplex canescens* (Pursh)—At Mesilla Park, April 29th, a honey-bee (*Apis mellifera ligustica* Spin.) was observed busily working on the flowers.

NYCTAGINACEÆ.

- Abronia turbinata* Torrey—Lep.: *Synchlæ lacinia* Geyer, Mesilla Park, April 29th (Ckll.).
- Wedelia incarnata* (L.)—*Anthophora maculifrons* Cress., Las Cruces, August 23rd (Townsend).

RANUNCULACEÆ.

- Pæonia* (cultivated)—Hym.: *Agapostemon texanus* Cress., Las Vegas (W. Porter).
- Delphinium scopulorum* Gray—Hym.: *Bombus nevadensis cressoni* Ckll.; *B. appositus* Cress.

CRUCIFERÆ.

- Dithyrea wislizenii* Engelm.—Lep.: *Synchlæ lacinia* Geyer, Mesilla Park, April 25th (Ckll.).
- Erysimum asperum* (Nutt.)—Hym.: *Halictus angustior* Ckll., Rio Ruidosa (Townsend).
- Lepidium eastwoodiæ* Wooton—Hym.: *Augochlora neglectula* Ckll., La Cueva, Organ Mts. (Townsend).
- Sophia andrenarum* Ckll., ined. (The common species with yellow flowers in the Mesilla Valley, confused at first with *Sisymbrium canescens*, later with *S. halictorum*, but quite distinct. True *Sophia halictorum* has very inconspicuous flowers, and occupies, in the main, a higher zone, coinciding with the lower part of the *Larrea-zone*)—(1.) Mesilla, April 12th; Hym.: *Andrena salicinella* Ckll., ♂, in numbers, hovering over the plants and alighting occasionally; *Augochlora neglectula* Ckll.; *Halictus pectoraloides* Ckll., ♀; *H. subobscurus* Ckll., ♀; *H. pseudotegularis* Ckll. var.; Dipt.: *Tetanops polita* Coq., det. Coq.; *Chlarops assimilis* Macq., det. Coq. (2) Mesilla, April 22nd; Hym.: *Agapostemon texanus* Cress., ♀. (3) Mesilla Park, April 27th; Hym.: *Apis mellifera ligustica* Spin.

CAPPARIDACEÆ.

Cleome serrulata Pursh.—The following insects were all collected on the flowers at Las Vegas in 1899:—Hym.: *Halictus sisymbrii* Ckll., ♀, July (Ckll. and W. H. Rishel); *Agapostemon texanus* Cress., ♀, July (N. Stern and A. Garlick); *Andrena argemonis* Ckll., ♀, July 20th (W. Porter); *Anthidium parvum* Cress., ♂ ♀, June 23rd (Ckll.); *A. perpictum* Ckll., ♂, August 1st (Ckll.); *Melissodes agilis* Cress., ♂ var., July 17th (A. Garlick); *M. gilensis* Ckll., ♀, July 20-22 (W. Porter); *M. grindeliæ* Ckll., ♀, July 22 (W. Porter); *M. pallidicincta* Ckll., ♀, July (Ckll., N. Stern); *M. tristis* Ckll., ♂ (probably the ♂ of *pallidicincta*), July 20th (Ckll.); *Anthophora cardui* Ckll., ♂, July 11th (Ckll.); *A. cleomis* Ckll., ♀, August 1st (W. Porter); *A. montana* Cress., ♀, July (M. Winters, N. Stern, A. Garlick); *A. occidentalis* Cress., ♀, July 20th (W. Porter); *Cælioxys rufitarsis* Sm., ♂, July 11th (Ckll.); *Megachile cleomis* Ckll., ♂ ♀, July (N. Stern, W. Porter, etc.); *M. latimanus* Say, ♀, July (Ckll., N. Stern, M. Winters); *Bombus americanarum* Fabr.; *B. morrisoni* Cress; *B. nevadensis cressoni* Ckll.; *Apis mellifera ligustica* Spin.; *Pelopæus servillei* Lep., July 10th; *Sphex* (*Chalybion*) sp.; *Astata* sp.; *Sphex ichneumonea* L., July 22nd (W. Porter). Diptera: *Odontomyia inæqualis* Loew. det. Coq., August 1st; *Comptosia macellaria* Fab., July 11th; *Eristalis latifrons* Loew., July 11th; *Lucilia* sp., *Silvius* sp.; Lep.: *Colias eurytheme eriphyle* Edw., ♂, July 2; *Pyrameis cardui* L., July 15th (W. H. Rishel); *Papilio* sp.; *Ctenucha venosa* Walk., July 16th (N. Stern); *C. cressonana* Grote, July 12th (W. H. Rishel). Hemip.: *Lygæus reclinatus* Say, July 11th; *Murgantia histrionica* Hahn, July 11th (M. Winters, N. Stern). Coleop.: *Nemognatha bicolor* Lec., July 5th (N. Stern); *Hippodamia convergens* Guér., July 11th, very abundant; *Zonitis atripennis* July 10th, abundant; *Clerus abruptus* Lec., July 10; *Cantharis biguttata* July 11th (N. Stern).

SAXIFRAGACEÆ.

Philadelphus argyrocalyx Wooton.—Dipt.: *Volucella ama* Willist.; vide Townsend, Pr. Texas Acad., 1897, p. 53, where the plant is given as *P. serpyllifolius*.

Ribes sp. (wild gooseberry).—Hym.: *Vespa diabolica fernaldi* Lewis, Beulah, May 30th (W. Porter).

Ribes sp. (wild gooseberry).—Hym.: *Osmia ribifloris* Ckll., ♀, *O. lignaria* Say, var. and ♀, *Cælioxys ribis* Ckll., ♀, *Anthophora portera* Ckll., ♂; Dipt.: *Epalpus signifera* Walker; all at Romersville, April 29th (W. Porter).

ROSACEÆ.

Fallugia paradoxa acuminata Wooton.—Flowers large, 26-40 mm. across (mostly of the larger size); stamens large, with large anthers; car-

pels concealed to the last in the bottom of the flower, their tips not above the level of the bases of the stamens; bracts and sepals frequently divided. Hym: *Apis mellifera ligustica* Spin., very many, April 30th, May 3rd; *Agapostemon splendens* Lep. var. ♀ (new to N. M.). April 30th; *Colletes* sp.; *Halictus sisymbrii* Ckll., ♀, April 30th; *Halictoides fimbriatus* (Cress.), ♀ var. (new to N. M.), April 30th; *Philanthus* aff. *albopilosus*, May 3rd; *Sphecodes* aff. *fortior*, May 3rd; Dipt.: *Compsomyia macellaria* Fabr., April 30th. Lep.: *Pyrameis cardui* L., April 30th; *Anosia stigosa* Bates, April 30th. All near Mesilla Park.

Fallugia micrantha n. sp. or var. Flowers small, 23-26 mm. diam.; carp-ls protruding, forming a green blunt cone, longer than the stamens, which are small, with small anthers; sepals rounded-truncate, with a green acuminate appendage about 2 mm. long, occasionally with two appendages; bracts linear, entire and simple, 3½-4½ mm. long; leaves and stems like *acuminata*. Hym.: *Oxybelus* sp.; *Apis mellifera ligustica* Spin.; *Philanthus* aff. *albopilosus*. Hemip.: *Phymata fasciata* Gray. All near Mesilla Park, May 3rd.

When first I found *F. micrantha* I thought it might be a dimorphic form of *F. paradoxa acuminata*, tending toward a diœcious condition, but against this is the fact that both forms fruit abundantly; and while some plants of *acuminata* were observed to have less fruit than usual, others were covered with fruit. Neither is the difference described owing to any difference in the age of the flowers; it is equally apparent in the old flowers and in the unopened buds. I therefore treat *F. micrantha* as a species, at least pending any proof which may be offered to the contrary. Wooton's *acuminata* was intended to include all the *Fallugias* of this region, the differences in the flower not having been noticed; but one of Wooton's original specimens, in his herbarium, and also Torrey's figure which he cites pertain to the form here designated *acuminata*.

Potentilla thurberi Gray.—Hym.: *Bombus monardæ* Ckll. and Porter; *B. prunelle* Ckll.; *Megachile fortis* Cress.; *Colletes gilensis* Ckll., ♂; *Vespa occidentalis* Cress. All taken on the Rio Ruidoso by C. H. T. Townsend. This *Potentilla* has dark red flowers.

Rosa neomexicana Ckll. = *fendleri* Wats. (part), not of *Crepin*. The insects here recorded were found on the flowers of this rose in Mesilla; the roses had been planted, and do not grow wild anywhere in the vicinity. On May 4, 1894, I collected the bees *Prosopis mesillæ* Ckll., ♂, *Agapostemon* sp., ♀, and *Diadasia apacha* Cress. On April 27, 1898, Mr. C. M. Barber collected the bees *Apis mellifera* L., *Augochlora neglectula* Ckll., *Halictus armaticeps* Cress., *H. sisymbrii* Ckll., *H. oleosus* Ckll., *Prosopis mesillæ* Ckll., and *Ceratina nanula* Ckll., *Rosa neomexicana* grows wild in the Sacramento Mountains, N. M.; it is closely allied to *R. woodsii*.*

* *Rosa neomexicana* was collected in plenty by Prof. E. O. Wooton at Cloudcroft, N. M.; I have also seen it there. It differs from *sayi* by the leaflets cuneate at base, teeth simple or slightly compound; from *woodsii* by the much taller stature (often 6 ft. high or

- Prunus* (cultivated plum).—(1) Mesilla, 1897; *Andrena fracta* Casad and Ckll., ♂, March 24; *Halictus amicus* Ckll., ♀, April 4; *Bombus* sp., *Thecla halesus* and *Diabrotica 12-punctata* April 15th, the last mentioned eating the pollen. (2) Mesilla Park, April 13-14, 1898; Hym.: *Andrena prunorum* Ckll.; *A. fracta*, Csd. and Ckll., many; *A. monilicarnis* Ckll.; *A. salicinella* Ckll.; *Anthophora maculifrons* Cress.; *Halictus pruinosus* Rob; *Bombomelecta alfredi* Ckll.; *Parandrena andrenoides* (Cress.); *Halictus armaticeps* Cress.; *Prosopis mesillæ* Ckll., ♂; *Melecta maculata* Cress.; *Halictoides* sp.; *Colletes wootoni* Ckll.; Lep.: *Synchlæ lacinia* Geyer, many; Dipt.: *Bibio pallipes* Say, det. Coq., also *Eristalis*, *Volucella* and *Ceria*.
- Prunus* (wild plum).—Hym.: *Bombus ternarius* Say; *B. juxtus* Cress.; *Megachile pollicaris pereximia* Ckll., ♂; *Andrena sapellonis* Ckll.; *A. vicina* Smith; *Vespa maculata* L. All at Beulah May 30th (Wilmatte-Porter).

LEGUMINOSÆ.

- Prosopis glandulosa* Torrey.—Hym.: *Prosopis mesillæ* Ckll., ♂ ♀; *P. asinina* Ckll. and Casad., ♂; *Perdita exclamans* Ckll.; *Ashmeadiella prosopidis* Ckll. All at Mesilla, May 7, 1897.
- Parosela scoparia* (Gray).—Hym.: *Megachile sidalceæ* Ckll., Mesilla, August 23, 1897.
- Parosela formosa* (Torrey).—Hym.: *Centris lanosa* Cress., ♂, several at Little Mtn., Mesilla Valley, May 1st (Ckll.).
- Psaralea tenuiflora* Pursh.—Hym.: *Cælixys gilensis* Ckll., ♀, *Megachile exilis* Cress., ♀. Gallinas R. at La Cueva, August 6th (Ckll., W. Porter).
- Petalostemon candidus* (Willd.)—The following were all taken at the flowers at Las Vegas, 1899. Dipt.: *Physocephla ochreiceps* Bigot-det. Coq., July 21. Hym.: *Andrena argemonis* Ckll., ♀, July, August (W. Porter, Ckll.); *Anthophora cardui* Ckll., ♂, August 11th (W. Porter); *Anthidium perpictum* Ckll., ♂ ♀, August 11th (W. Porter); *A. portercæ* Ckll., ♂, August 11th (W. Porter); *Megachile manifesta* Cress., ♀, August (W. Porter); *Bombus fervidus* Fabr.; *B. scutellaris* Cress.; *Cerceris venator* Cress., July 21st.
- Medicago sativa* L. (alfalfa).—The following were taken at Las Vegas, 1899: *Megachile cleomis* Ckll., ♀; *M. latimanus* Say, ♀; *Melissodes agilis aurigenia* Cress., ♂; *Prosopis mesillæ* Ckll., ♀; *Anthophora bomboides neomexicana* Ckll., ♂; *A. urbana alamosana* Ckll., ♂; *Apis mellifera ligustica* Spin.

more), and small solitary flowers; from *blanda* by the infrastipular spines normally in pairs, and the solitary flowers; from *aciculata* (Ckll. described as *blanda* var.) by similar characters. The flowers of *neomexicana* are sometimes two or three together, but then only one fruit seems to mature. The fruits are small, scarlet, oblong. Sepals entire, with more or less foliaceous tips. Stipules entire, but glandular-margined.

Melilotus alba Desv.—Hym.: *Philanthus frontalis* Cress., ♀. Dipt.: *Nemotelus unicolor* Loew, det. Coq. Both at Las Vegas, August 9th (Wilmatte Porter).

Trifolium repens L.—Hym.: *Melissodes pallidicincta* Ckll., ♀, Las Vegas, July 3rd (N. Stern).

Lupinus sitgreavesii Wats.—Hym.: *Bombus nevadensis aztecus* Ckll.

Astragalus humistratus Gray.—Hym.: *Megachile fortis* Cress., Rio Ruidoso (Townsend).

Vicia sp. prob. new, near *pulchella* H. B. K. (Wooton's No. 288).—Hym.: *Megachile fortis* Cress.; *Melissodes ruidosensis* Ckll.; *Bembex spinolæ* Lep., ♀; *Colletes gilensis* Ckll., ♂; *Celiomyia gilensis* Ckll., ♂; *Bombus fervidus* Fab.; *B. sonarus* Say; *B. juxta* Cress.; *B. ternarius* Say; *B. prunellæ* Ckll. All collected by C. H. T. Townsend on the Rio Ruidoso. Prof. Wooton considers this *Vicia* distinct from *V. pulchella*, and knows of no name that can be applied to it.

A New Ceratina from New Mexico.

By T. D. A. COCKERELL.

Ceratina neomexicana n. sp.

Female.—Length $7\frac{1}{2}$ —9 mm.; dark green; occiput dark blue; mesothorax with a slight coppery tint at the sides of the middle; first three segments of abdomen dorsally rather olive green; clypeus with a broad-pyriform cream-colored patch; ends of tubercles also cream-colored or ivory-white; wings strongly suffused with reddish brown; nervures and stigma dark. Allied to *C. dupla* Say, but usually larger and easily distinguished by the more sparsely-punctured face, with a shining impunctate supra-clypeal space, and similar spaces above the lateral pieces of the clypeus; the sides of the vertex very sparsely punctured; the mesothorax smooth and shining, with sparse punctures on the anterior third, and rather close punctures round the edges, but otherwise impunctate; cheeks with small and very sparse punctures, a broad band behind the eyes impunctate; punctures of middle of abdominal segments smaller and sparser than in *dupla*; flagellum black above, last six joints reddish brown beneath.

Hab.—Chicarico Cañon, near Raton, N. M., Aug. 25, 1900 (Ckll.); Santa Fé, N. M., July 10 (Boyle), July 7, at flowers of *Aquilegia* (Ckll.).

MRS. E. M. SWAINSON, 2131 Guildford Ave., Baltimore, Md., will collect in Jamaica, commencing about April 1st. She will be pleased to hear from anyone interested in Jamaica insects.