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X

SCELLUS VIRAGO ALDRICH (A TWO-WINGED FLY)
AND TWO FORMS CLOSELY RELATED TO IT

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In the two tables of species of the North American *Scellus* published since 1907 the first couplet reads about as follows:

Third joint of antenna very long and pointed.....*virago* Aldrich
Third antennal joint very short..... 2

Below two more species are described with antennæ formed the same as in *virago*, and which would pass for that species if no typical specimen of *virago* were at hand to compare them with.

In 1915 I took a series of *Scellus* at Great Salt Lake, Utah, which I determined as *virago*, and had no doubt of the determination until 1923 when my brother sent me two specimens taken in California, which I found very distinct from those taken in Utah. In January, 1924, while at the National Museum I looked up the type of *virago* and found both my forms quite distinct from that species. I am redescribing *virago* to cover the points in which the three forms differ and giving full descriptions of the new forms. These three species differ from all our other species in having the third antennal joint very long and pointed. They have very long anal appendages issuing from between the fourth and fifth abdominal

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segments; these I am calling the outer appendages, although I doubt whether they are morphologically the same as the outer lamellæ of other Dolichopodidæ. Below these are two or three pairs of appendages which I am calling the inner appendages.

I am greatly indebted to Dr. J. M. Aldrich for the loan of one of the type specimens of *virago* from which to make the drawings for this paper.

Table of the males of the *virago* group:

1. Middle tibia with long curled hair only near the tip (fig. 7)
 *virago* Aldrich
 Middle tibia with long curled hair on nearly their whole length
 (figs. 15 & 23)..... 2
2. Long anal appendages arising between fourth and fifth abdominal segments nearly bare, except at tip (fig. 18)....
 *varipennis*, new species
 Long anal appendages with long curled hair on apical two thirds of one edge (fig. 8).....*crinipes*, new species

Scellus virago Aldrich

Aldrich, Entomological News, Vol. xviii, p. 133, 1907; Greene, No. 2529, Procs. U. S. Nat. Mus., Vol. 65, Art. 16, p. 3, original description copied, figs. 8, 15, 19 and 28, 1924.

Male: Antennæ much elongated, the joints being 8-3-25 twenty-fifths of a millimeter long. Four black bristles and several long white hairs above each anterior coxa; fore coxæ with a few small pale hairs on anterior surface and several black bristles, extending upward from the tip; middle trochanters with several small black hairs, hind ones with black bristles; fore femora with numerous bristles below, some of those near the base being about as long as the thickness of the femora; middle femora slender, somewhat arched, nearly bare below, but with a few bristles on apical third of anterior surface, two bristles above and one or two on posterior surface, also a row of short, delicate hairs on the lower surface; posterior femora with two rows of hairs below, which are a little longer than those on the sides, the hind femora a little more thickened than the middle ones, but not as much so as the anterior pair; fore tibiæ (figs. 5, 6) with hairs below on basal half and stout bristles on apical half, these hairs not as long as the diameter of the tibia at base, and the bristles scarcely as long as the thickness at point of insertion; on anterior surface, before apical fourth a moderately large, stout, curved spine, shining black when viewed from below, but green and dull when seen from above; the large projection below at tip shining black, with a pair of little bristles at tip, several stout, very short, erect spines near the tip on apical margin where there is also a number of long hairs or

bristles extending upward towards the tarsus; on the inner margin a row of short hairs, the upper portion of the end of the tibia rounded and fringed with short, close-set, yellow hairs; middle tibiae (fig. 7) on the lower surface of basal three-fourths with only straight or slightly bent hair, on apical fourth a cluster of curled hairs, twice as long as diameter of thickened end of tibia; below with two subapical bristles; anterior surface with seven long bristles, nearly as long as second joint of middle tarsi; beyond these a pair of bristles a little shorter, one nearly above the other, and at apical eighth another short bristle; on upper surface near basal fourth one pair of bristles and a single one at middle on posterior edge; posterior tibiae without bristles, but with a stripe of very short yellow hair on upper posterior edge of apical fourth, widest apically; these tibiae bent outward a little at tip when viewed from above; all tibiae with more or less of apical portion of a beautiful blue; middle basitarsus (fig. 7) with several bristles, the two nearest base $2/5$ of a millimeter long; posterior basitarsus with two bristles above, one near the base and one at basal third; also a smaller bristle at apical third.

The anal appendage which issues from between the fourth and fifth segments (fig. 1) is about 2.4 millimeters long, the apical portion spoon-shaped, the narrow part whitish, black at base and fringed on one edge, except at base, with pale hairs; the apical portion, or spoon (fig. 2) has these pale hairs continued to tip, this fringed edge narrowly black and with a stripe of curled hair on the inner edge of the black border; apical margin to lower angle of tip very narrowly black; lower angle with a cluster of spreading, whitish bristles; two pairs of inner appendages visible, first pair (fig. 3) large, black and fringed with small hairs above; second pair (fig. 4) smaller and black, tipped with two small stiff little hairs.

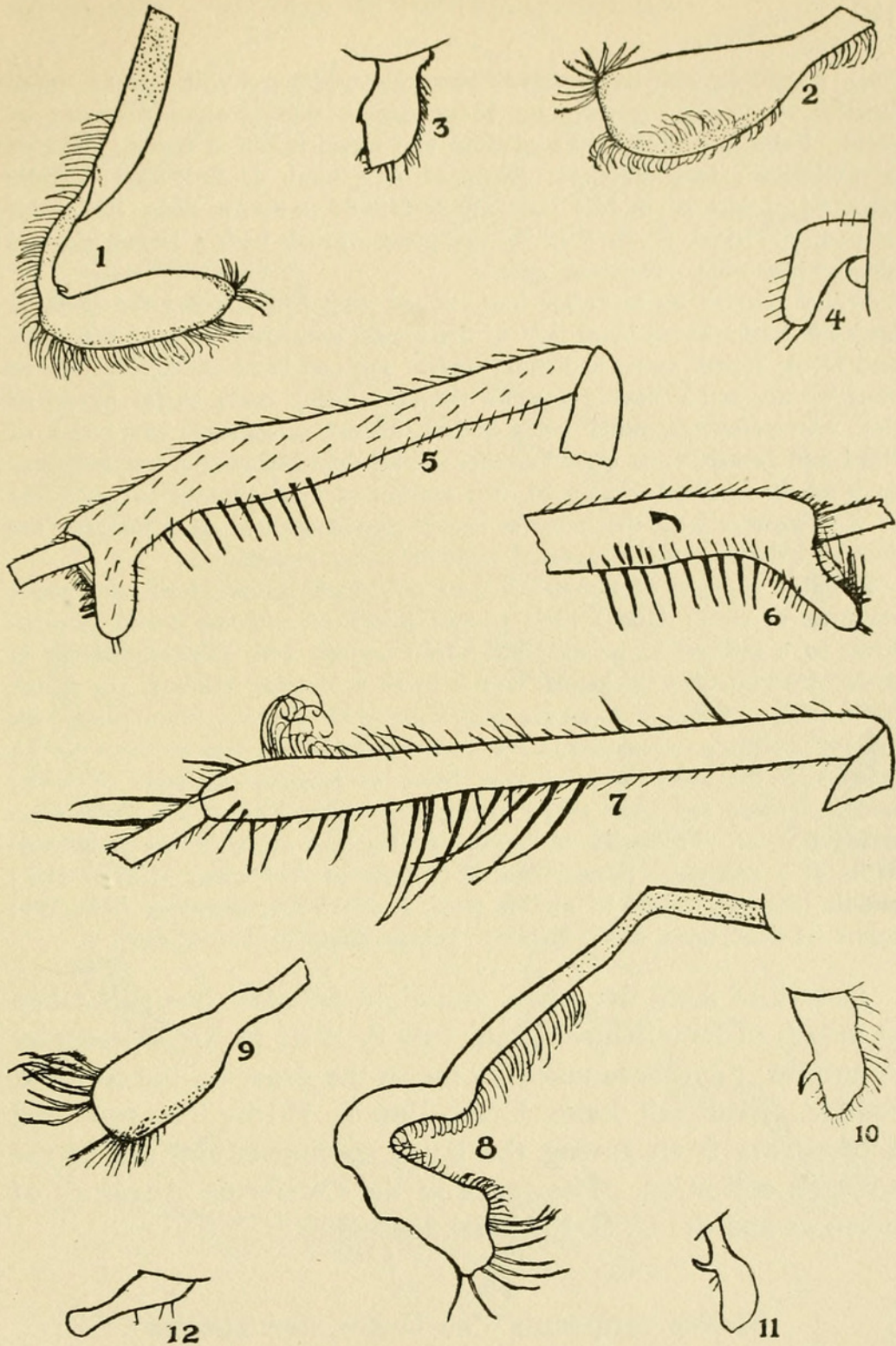
Scellus crinipes M. C. Van Duzee, new species

Male: Length, exclusive of anal appendages, 5 mm.; of wing 7 mm. Face long, quite wide, covered with white pollen (not silvery) reaching the lower corner of eye; portion below suture longer than wide; lower edge rounded; palpi and proboscis black, the former with white pollen; antennae elongated, black; first two joints taken together about equal to lower portion of face, third joint equal to length of upper part of face; joints of antennae 8-3-28 twenty-fifths of a millimeter long; arista nearly apical, $8/25$ of a millimeter long; front black, with brown pollen in central portion, that above antennae and on a narrow space along orbits, whitish; upper orbital cilia formed of five black bristles on each side; one pair of postverticals, and quite an abundant beard of long whitish hair.

Dorsum of thorax opaque with a grayish brown pollen, which leaves a narrow coppery line each side of acrostichal bristles, and a large space of same color before scutellum; a broad, poorly defined, shining stripe

on the sides of the dorsum when viewed from behind; bristles of thorax inserted in dark brown dots; pleuræ more black, with white pollen; scutellum with one pair of bristles; propleura with three black bristles and a few pale hairs above fore coxa; abdomen short, bronze-colored, with green and coppery reflections, dulled with white pollen; each visible segment with three shining black dots on lower part of sides; hairs on the abdomen small, pale; hypopygium mostly concealed. There are anal appendages projecting from between fourth and fifth segments on sides of dorsum (fig. 8), long and narrow with a large spoon-shaped end, black at base but otherwise mostly white; upper margin of spoon (fig. 9) narrowly blackish, outer angles each with a small black spot; on one edge of narrow portion and extending onto the spoon is a fringe of quite long pale hairs; at each outer angle of the spoon is a somewhat fan-shaped cluster of hairs, which appear brown in certain lights; three pair of inner appendages; the first (fig. 10) black, with a thorn-like projection on side and fringed with small hairs; second (fig. 11) yellowish with a curved thorn on side and with end enlarged; third pair (fig. 12) yellow, halter-like.

All coxæ black with white pollen; anterior surface of fore coxæ with a few pale hairs and with a row of five, rather small, black bristles on outer edge of apical half; middle and hind coxæ with a few stiff black hairs at tip; all femora and tibiæ green; fore tibiæ on most of apical two-fifths black with some coppery reflections; all tarsi black, sometimes more or less greenish; fore femora thickened, with numerous spines below, those near the base nearly as long as thickness of femora at point of insertion, those near tip short; anterior tibia (figures 13, 14) thickened and bent; on anterior surface a little beyond middle a large, slightly bent thorn; about opposite this thorn on lower edge begins a row of large, black, stubby bristles; when viewed from tip along inner surface these bristles bend inward and there are several bristles around the thorn that bend towards those in lower row; at tip is a large lobe extending downward, which has a row of small hairs on edge nearest femora, two small bristle-like hairs at tip, and delicate hairs on apical edge, where there are also a few stubby spines near tip; on upper portion of end of tibia are some small yellow hairs; middle femora long, not thickened, arched, with a few short bristles, six on upper and four or five on lower anterior edge, none as long as diameter of femora; middle tibiæ (figs. 15, 16) with long, black, curled hair on nearly their whole lower surface, these hairs a little longer near tip; on upper posterior edge of middle half, is a row of eight bristles scarcely as long as diameter of tibia at their insertion; commencing on upper anterior edge a little beyond the middle is a row of long, deep black bristles, this row slants downward and becomes a dense cluster just beyond apical third; they are as long as the thickened end of tibia; two moderately long bristles below and two above near apical end of tibia; posterior femora and tibia long and rather slender, the former only a little thicker than middle femora, and with a few short bristles, the latter without bristles; all tarsi plain; first joint of fore tarsi with rather



EXPLANATION OF FIGURES

Fig. 1, *virago* Aldrich, anal appendage. Fig. 2, *virago*, tip of anal appendage seen from the rear. Fig. 3, *virago*, first inner appendage of the hypopygium. Fig. 4, *virago*, second inner appendage. Fig. 5, *virago*, fore tibia, posterior view. Fig. 6, *virago*, tip of fore tibia, anterior view. Fig. 7, *virago*, middle tibia and base of tarsi. Fig. 8, *crinipes*, new species, anal appendage. Fig. 9, *crinipes*, tip of anal appendage seen from above. Fig. 10, *crinipes*, first inner appendage of the hypopygium. Fig. 11, *crinipes*, second inner appendage. Fig. 12, *crinipes*, third inner appendage.

long, dense, delicate hairs below; posterior basitarsus with several small bristles on upper surface, two being slightly longer than diameter of joint. Following are lengths of tibiae and tarsal joints in twenty-fifths of a millimeter: fore tibia, 44; joints of fore tarsi, 42-29-19-11-8; middle tibia, 84; joints of middle tarsi, 49-24-14-9-8; posterior tibia, 78; joints of posterior tarsi, 57-35-19-12-8. Calypters whitish with a brown tip and short white cilia. Halteres yellow.

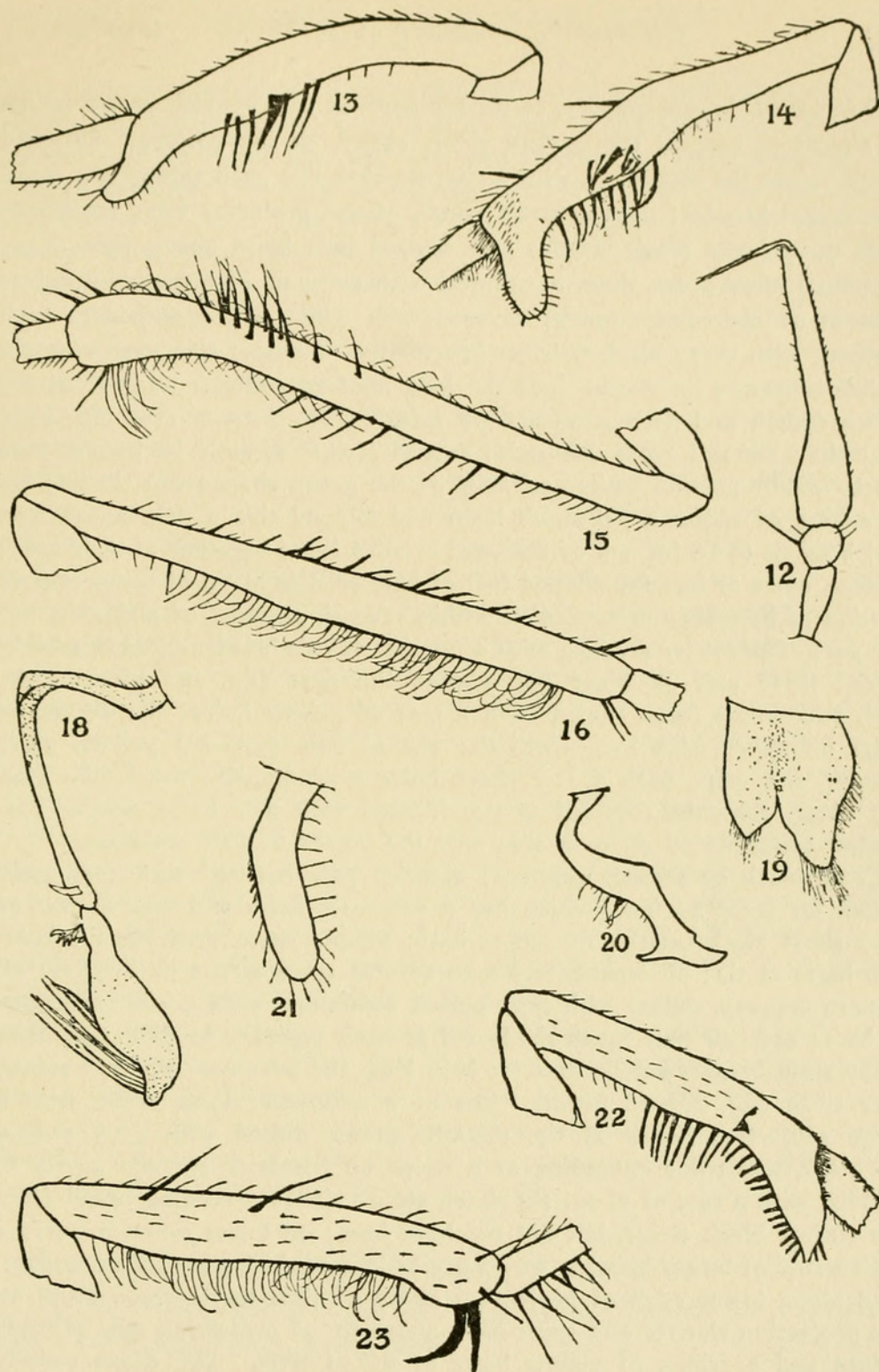
Wings grayish on posterior half, tinged with brown from the costa to back of third vein, in basal half of discal cell, extending back of fifth vein and along fourth vein; a distinct brown spot on bend of last section of fourth vein, and a double spot on the cross-vein; costa as far as tip of first vein yellowish, other veins brown, except at extreme base; tips of third and fourth veins close together; sixth vein reaching about half-way to wing margin; cross vein 20, last section of fifth vein 12 twenty-fifths of a millimeter long, the latter at nearly right-angles to wing margin; the former oblique, but not parallel with the wing margin.

Female: Length 4.5-6 mm.; of wing 6-7.2 mm. Color of all parts about same as in male; face a little wider; joints of antennae 8-4-18 twenty-fifths of a millimeter, arista 15/25; fore femora with spines below as in male; anterior tibia thickened, with a small projection below at tip, which has a fringe of stiff hairs on the edge nearest the femora; these tibiae with several bristles on upper surface and two rows below, two or three of the bristles in the lower anterior row being as long as thickness of tibia; middle femora and tibiae nearly straight and plain with a few short scattering bristles. Following is length of tibiae and tarsal joints in twenty-fifths of a millimeter: fore tibia, 47; joints of fore tarsi, 35-25-17-11-7; middle tibia, 86; joints of middle tarsi, 48-23-15-9-8; posterior tibia, 101; joints of hind tarsi, 51-32-20-11-8. Wings about as in the male.

Described from five males and eight females; one pair taken at mouth of Bear River, Utah, July 2, 1916, by Dr. Alexander Wetmore; the others taken by me in the grass on the shore at Saltair, Great Salt Lake, Utah, June 8, 1915. The type and allotype are from among the latter specimens and are in the author's collection. Paratypes in the California Academy of Sciences and the U. S. National Museum.

***Scellus varipennis* Van Duzee, new species**

Male: Length, without the anal appendages, 7 mm.; with appendages, 9.5 mm.; length of wing, 8 mm. Face wide; palpi and face covered with yellowish gray pollen; front opaque with brown pollen, except a narrow line of pale pollen along the orbits; antennae (fig. 17), black; length of its joints in twenty-fifths of a millimeter are 10-4-28, and of arista, 8; arista inserted close to the tip; upper part of the posterior orbits with six large black bristles; one pair of postverticals; beard abundant, long, white.



EXPLANATION OF FIGURES

Fig. 13, *crinipes*, fore tibia, seen from above. Fig. 14, *crinipes*, fore tibia, anterior view. Fig. 15, *crinipes*, middle tibia, upper anterior view. Fig. 16, *crinipes*, middle tibia, posterior view. Fig. 17, *varipennis*, new species, antenna of male. Fig. 18, *varipennis*, anal appendage. Fig. 19, *varipennis*, first inner appendage of the hypopygium. Fig. 20, *varipennis*, second inner appendage. Fig. 21, *varipennis*, third inner appendage. Fig. 22, *varipennis*, fore tibia, anterior view. Fig. 23, *varipennis*, middle tibia and base of tarsi.

Dorsum of thorax coppery, so thickly covered with grayish brown pollen as almost to conceal the ground color, except on the posterior flattened space before the scutellum, with a narrow dark line each side of the small acrostichal bristles; dorsocentrals small, except posterior two; prothorax with three large black bristles and several pale hairs above fore coxa; scutellum more green than thorax and with one pair of marginal bristles; dorsum of abdomen coppery, covered with white pollen on sides; each segment with three black dots on lower edge of sides; abdomen with six visible segments on dorsal line; the long anal appendages issue from between fourth and fifth segments, on sides of the dorsum (fig. 18), bend near the base and from that point extend almost directly backward, base black, middle portion white and most of the spoon-shaped end brown; before base of spoon a yellowish horn and beyond this a pale appendage, which seems to be formed of flattened bristles fused together at their base; a large, more or less fan-shaped tuft of pale bristles at tip of spoon; upper portion of hypopygium concealed within seventh segment of abdomen, upper part of posterior surface with a number of pale bristles extending backward; three pair of inner appendages, the first (fig. 19) black, wide, with two points, each tipped with a tuft of yellow hairs; the fringe of hairs on upper edge more grayish; second pair (fig. 20) yellow, quite slender and bent, with a few short hairs near middle; third pair (fig. 21) black, elongate, rounded at tip, fringed with pale hairs, widely separated, being placed on each side near the venter of fifth segment.

Coxæ black or slightly coppery; anterior pair covered with dark gray pollen on front surface, which has a few pale hairs and also a row of very short black bristles on apical half; middle coxæ with black bristle-like hairs at tip; all trochanters with several small spines or bristles; all femora coppery, dulled with gray pollen, sometimes with green reflections at base; anterior pair much thickened at base, tapering to their tips, with many stout bristles below, those at base long, the ones near tip very short; fore tibiæ (fig. 22) 52 twenty-fifths of a millimeter long, stout, with a large projection below at tip, metallic green, dulled with gray pollen, tip black, this color extending as a stripe on posterior surface nearly to middle, with a row of about six short, stout bristles extending basad from the end of black stripe, but not reaching base; on lower anterior surface with a row of larger bristles, which are as long as thickness of tibia, and extend along lower edge of projection at tip of tibia to its apex, those on the projection shorter and spine-like; above tip of projection two of these spines and a fringe of yellow hairs at tip of tibia. The thorn usually found on anterior surface of tibia in this genus is represented by a small, shining black, elevation on the surface near apical third, this with the appearance of a black transverse line with two slight elevations, the upper of which is only slightly raised above the surface; middle femora long, bent, a little thickened in the middle, without any long bristles, their hair black, except a row of short, very delicate pale ones on lower posterior surface; middle tibia (fig. 23) green, dulled with gray pollen, with coppery reflections on upper surface, except at tip; lower posterior sur-

face dark, shining green; tibiae a little thickened and bent downward just before tip; below close to tip a pair of long curved thorns and a pair of shorter bristles above near tip; two long bristles on upper posterior surface of basal half; on anterior surface is one long bristle near base above and a row of three long ones beginning at middle; beyond these two smaller ones, one below the other. The whole lower surface of these tibiae is covered with long, black, curled hair; many of these hairs longer than thickness of tibia; they are mostly of nearly equal length from base to near tip, where they end abruptly, leaving tip of tibia bare; viewed from above there is a dense bunch of very black, long, curled hair near tip on posterior surface, these connected with those on lower surface; posterior femora distinctly thickened, with three rather small bristles on upper surface of apical third; near lower edge of anterior surface of basal half is a row of black bristles, also another row of bristles on lower edge of anterior surface of apical half; posterior tibia 102 twenty-fifths of a millimeter long and bent near apical third when seen from above; lower surface hollowed out before tip, which projects a little downward at apex; lower surface of apical third with a row of small black spines which end before tip; on upper posterior surface a stripe of dense, very short, yellow hairs, which reach from tip nearly to middle; first joint of anterior tarsi with a dense fringe of short golden yellow hairs on whole of lower anterior surface, and a fringe of longer black hairs on lower posterior surface, first joint of middle tarsi (fig. 23) with several long bristles at base below, fully as long as curved thorns at tip of tibia; also several shorter bristles beyond these; hind tarsi with two or three bristles above, which are as long as diameter of joint; length of joints of tarsi given below in twenty-fifths of a millimeter; joints of fore tarsi, 37-28-20-14-11; of middle ones, 56-25-18-11-10; joints of hind tarsi, 58-41-26-15-11. Calypters and halteres yellow, the former with white cilia.

Wings tinged with brown, posterior margin and center of cells more gray; a conspicuous whitish spot back of fifth vein near root of wing; they have a dark brown spot on the bend of last section of fourth vein and a double spot on the cross-vein; sixth vein faint, not reaching wing margin; last section of fifth vein 12, of cross-vein 23, twenty-fifths of a millimeter long. Described from two males.

Type: Male, No. 1647, Mus. Calif. Acad. Sci., collected by C. L. Fox, August 2, 1922, at **Lake City, Modoc Co., California**. *Paratype*, male, same data.



Van Duzee, M. C. 1925. "Scellus virago Aldrich (A two-winged fly) and two forms closely related to it." *Proceedings of the California Academy of Sciences, 4th series* 14, 175–183.

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