

frons. It is characterized by having the front reddish-yellow with vertex brown, the legs brown, abdomen with no yellowish or reddish except at tip, three thoracic lines, and the black median pair of abdominal stripes pronounced.

The present specimen has the median thoracic line more pronounced than in the variety *abdominale*, but still narrower than the outer ones. The pollen of fourth, fifth, and sixth segments assumes a strong golden hue, especially when viewed obliquely from in front. Fifth and sixth segments and base of seventh reddish-yellow under the pollen. The median abdominal stripes are deep black; they form two widened subsquare markings on second segment,

two broad lines on third, and two narrow lines on fourth. They are widened at hind margin on second and third segments. Very few dots present in the pollen of abdomen. These in the main are the characters of the typical form.

All the other specimens that I have taken in New Mexico (Mesilla Valley, Organ Mts., Tularosa Plains) are var. *abdominale* (3800-5500 ft.). The present is the only one of the typical form taken, and it comes from about 7000 ft. elevation. (See paper on Dipt. Organ Mts. for notes on var. *abdominale*.)

N. B.—By mistake the species given in section I of this paper were not numbered. They include numbers 1 to 6. Those in this section are numbered from 7 on.

TWO FORMS OF FLUTED SCALE.

Up to the present the famous Fluted Scale (*Icerya purchasi* Maskell) of California has been regarded as a single species, without any important variations. I was therefore surprised to learn from Mr. Alex. Craw that over six years ago he had noticed that there were two distinct forms, and that his subsequent experience had shown him that they remained distinct, and did not depend on location or food-plant. Mr. Craw has been so good as to send me living adult females of the two varieties, and they can be readily distinguished as follows:—

(1.) var. *maskelli*. Female (after forming ovisac) slate grey or very dark purplish-grey, sometimes brownish in the middle, with marginal dull orange spots. Back little covered by secretion. More hairy at the cephalic end than the next. Ovisac not so large as in the next; tinged with yellow just behind the body of the insect. Mr. Craw says this is the form they had in Los Angeles. It is *purchasi* in the strict sense, and agrees

very nearly, though not entirely, with Maskell's description.

(2.) var. *crawii*. Female (after forming ovisac) light pinkish or yellowish-red, the margin orange, with bunches of short black bristles. The back is largely covered with yellowish-white secretion. Ovisac somewhat larger and longer. Legs somewhat smaller, femora decidedly more slender. This may prove to be a distinct species, but the larval and adult characters, except those mentioned, agree so well with *purchasi* that it seems best to give it only varietal rank.

Both forms were sent on *Citrus*; the precise locality not stated. Mr. Craw says: "When I sent two large boxes of infested branches from Lodi to San Gabriel to stock the two large glass breeding houses for *Vedalia cardinalis* that the State Board erected there, I saw that the light colored scale [*i. e.* var. *crawii*] retained its characters there on the orange trees."

T. D. A. Cockerell,
Mesilla, N. M., May 30, 1897.

THE SPECIES OF ANABRUS AND THEIR DISTRIBUTION.

FROM an examination of over two hundred specimens of *Anabrus* from different parts of the west, there appear to be four species in the United States. The first described was (1) *A. simplex* Hald. (Stansb. Expl. Utah, 372, pl. 10, fig. 4) which was first recorded from Salt Lake and is found over the interior plateau west of the Rocky Mts., and north of southern Utah to the Sierras and, beyond them, in northern California, Oregon and Washington. The figures of the species given by Glover (Illustr., pl. 9, fig. 1, pl. 14, fig. 5), Thomas (Hayden's Fifth Ann. Rep., pl. 1, fig. 1), and Packard (Second Rep. Ent. Comm., 164) belong here, and this is probably the case also with the figures of Herman (Verh. zool.-bot. ges. Wien, 24: pl. 6, figs. 76-86), which I formerly doubted (Rep. Chief. eng., 1876, 500).

The second species described was (2) *A. purpurascens* Uhl. (Proc. Ent. soc. Phil., 2: 550), a name which must be restricted to the species found east of the Rocky Mts., from Montana, Dakota and Manitoba over the prairies and plains as far as Kansas. The

type specimens (in my collection) come from Red River, Manitoba, and the specimens mentioned by Uhler from Texas and Washington probably belonged to other species. *A. similis* Scudd. (Hayd. Rep. Nebr., 249) is a synonym of this. The figures given by Glover (Illustr., pl. 17, figs. 10, 11) belong here, but that by Packard (Second Rep. Ent. Comm., 163) belongs to the next species.

This is (3) *A. coloradus* Thom. (Hayden's Fifth Ann. Rep., 440), redescribed in part by me (Rep. Chief Eng., 1876, 500), a mountain and alpine form, found mostly in Colorado but also extending south to New Mexico and Texas, unless the specimens from the latter state (of which I have but few, in poor condition) belong to *A. purpurascens*. As stated above, this species is figured by Packard under the name *A. purpurascens*.

A (4) fourth undescribed species in my collection, from Texas, is readily distinguished from the others by its much slenderer and relatively longer legs. The other species referred at different times to *Anabrus* do not belong here (See Can. Ent., 26: 180-81).

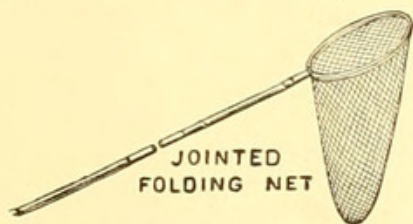
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