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Notes on the Flora of Plumas County, by Mary E. Pulsifer Ames.

On a balmy morning in the month of May we left our home near Auburn, on a botanical pilgrimage to Butterfly Valley, some twenty-five miles distant. This isolated, though charming retreat, is the habitat of one of California's most rare and curious plants, *Darlingtonia Californica* Torrey, which flourishes here in all its native wildness and luxuriance. A botanical friend, Mrs. R. M. L. Austin, at whose hospitable home we were most cordially entertained, resided here, and was then engaged in making the series of very interesting and valuable observations (that have made her name so famous at home and abroad) on the physiological structure and habits of this most wonderful plant.*****Among the many interesting characteristics discovered by Mrs. A., none, perhaps, is more wonderful than her detection of the great increase of the liquid in the tubes when fresh meat is introduced. This important discovery is particularly gratifying to herself and friends as being made and recorded prior to receiving Darwin's "Insectivorous Plants", where he notes the same fact in reference to *Drosera rotundifolia*. From a recent letter received from her, I make the following extract in reference to this discovery:
" In July, 1875, I fed a great many of the leaves, some with fresh raw mutton and others with that which was boiled. The liquid, in the course of a week, would fill the tubes and flow out of the orifice".
The next in importance was her discovery of innumerable white larvae in the tubes of new leaves before the opening of the orifices of the hoods.

(This is the full text of the reference to Mrs. Austin's experiments)

2 Leaves of *Darlingtonia Californica* and their Two Secretions,

Through the kindness of Dr. Gary we are permitted to publish the following interesting communication from Mrs. R. M. Austin, of Pratteville, Plumas Co., Cal.

"Found the sweet secretion, or lure, on all the new leaves of *Darlingtonia* having the orifices of the hoods open, and captured insects in the liquid at the bottom of the tubes. The sweet secretion was confined to the inner and rough portion of the hoods, the rim or fold around the orifices, and on the outside of the hoods, corresponding in extent to the rough inner part, on both sides of the 'fishtails', and extending down the wing to where it makes the outward bend. This bend can be seen in dried specimens. In no instance have I found the lure below this. I was fortunate in finding about a dozen new leaves having the orifices still closed, and the process of secreting the clear liquid going on. I noted carefully the places of secretion and manner, as well as I could.

The liquid is poured, or, apparently, oozes out of the lower or hairy part of the tubes, the rough part of the hoods, and where the translucent dots are on the petioles there are minute globules of clear liquid. The little globules are not easily broken up or separated, but when I would touch them with the point of a pin or a pine leaf, would roll down over the velvety part of the tube, as little globules of mercury do on glass. I tried holding the tubes horizontally, and touching them. In this position the drops would move about and not be broken up. I then rubbed my fingers lightly over the velvety portions of the tubes, thereby removing the fine bloom that covers this portion of the tubes. Now, when I would touch the little drops with my pin they would be broken up and wet the surface. The velvety part of the tubes are always dry and clean, in new and old

leaves." *I think for Am Naturalist*

Darlingtonia Californica, Torr. In September, 1874,

while observing the habits of Darlingtonia, I found a great many small white larvae in the liquid and insect mass at the bottom of the tubes. They were found in all the tubes, even those of the seedling leaves contained from one to three, while in the larger leaves they numbered hundreds. I tried, in vain, to find out what insects produced the larvae and to note any change in them. They are always present winter and summer, and even active even when the thermometer marks zero. They make their appearance in the young leaves soon after they begin to secrete the clear liquid in the tubes before the orifice of the hoods are open, and no trace of any insects in the liquid for them to feed on. If flies, or small bits of fresh meat be placed in the tubes having closed hoods, the larvae will immediately begin feeding on them, and if the pieces are no larger than grains of wheat nothing will remain after forty-eight hours.

In February 1875 I made an examination of the larvae when the thermometer was a little below zero, and the liquid in the tubes was frozen down to the insect mass. I found them numerous and active. I selected four tubes of average size and took them home for the purpose of numbering the larvae. In the first was 59; second 82; third 168; and fourth 206.- R. M. Austin, Crescent Mills, California

Austin notes

Sent to J. M. Macgregor

from Am. Naturalist

I did not find any of the white larvae in the leaves having closed orifices, but there were many in the new leaves having the orifices open, and also in the old leaves of last year. Many of the old leaves were pretty well smeared with the lure, which must have been secreted this season, as it could not have remained upon them during the heavy rain and snow storms of last winter."

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