

When a cylindrical wire gauze was placed over the plant the hyphæ made no bendings, although a bell glass made no difference at all in their response to the electrical stimulation.
—GEO. E. STONE.

The vegetation of the paramos of Venezuela.¹

This paper contains a general sketch of the vegetation of the paramos with reference to the distribution and appearance of certain plants, and an account of the biology of these xerophilous plants.

Some of the Compositæ are characteristic of the paramo vegetation. Transpiration is diminished in these plants in different ways; for instance, by a dense cover of woolly hairs, by the development of coriaceous leaves, sometimes small in size and with involute margins, or by the development of merely short stems with densely leaved rosettes and underground reservoirs of nutritive matters. These characters are not, however, strictly separated, for more than one may be observed upon the same plant. Several other families besides the Compositæ show the same peculiarities.

The leaves of *Espeletia* have an immense cover of long white hairs, which are bent into broad spirals, so as to form a layer many times thicker than the leaf-blade itself. Thus the plant is well protected against a too rapid change in temperature, against the exsiccating effect of the winds, and has at the same time gained control of the transpiration. The leaf has a distinct hypoderm, which probably serves as a water-reservoir, and the inferior face shows several longitudinal ribs, which border on corresponding cavities in the leaf-blade. The chlorophyll-bearing parenchyma covers the furrows between the ribs, and there are in the interior part of the leaf wide openings, which remind us of lacunes, but which are covered with hairs and provided with stomata. These openings have been formed merely by a turning inwards of the surface of the leaf-blade. Of other paramo-plants with similar covering of hairs are mentioned a *Plantago*, a *Lupinus*, and especially the remarkable *Jamesonia nivea*. This last shows an aspect widely different from other ferns; the pinules are horizontally spread out and cover each other as closely as the coins in a roll.

¹ K. GOEBEL:—Die Vegetation der venezolanischen Paramos. Pflanzenbiologische Schilderungen, Pars 2. Marburg 1891.

Protection secured by diminishing the leaf surface is especially marked in a grass, *Aciachne pulvinata*. The blade is so strongly involute that the stomatiferous superior face is a mere furrow. The cells of the inferior epidermis are very thick walled and there are three layers of sclerenchyma inside the epidermis, all around the blade.

In some other plants the leaves are awl-shaped with the aspect of conifers or lycopods; such forms were observed in *Hedyotis nitida* HBK., which belongs to the Rubiaceæ; in *Lysipomia* of the Lobeliaceæ; and in *Phyllactis* of the Valerianaceæ; in species of *Alchemilla* and others.

There are, however, other peculiar forms of paramo-plants, which can not be arranged under any of the three above named groups; for instance some Umbelliferæ with leaves like those of a *Funcus*, namely *Ottoa*, *Crantzia*, etc.

Although these paramo-plants show the so-called xerophilous structure, the author calls attention to the fact, that a similar structure is also known in plants which do not belong there, but inhabit widely different localities. We therefore cannot always depend too much on structure in determining the character of the locality, because anatomical structure in this instance merely shows that the individuals live in a climate where a protection against transpiration has become necessary. This special vegetation seems to have been forced into its present shape for defence against stormy winds rather than extreme heat.—THEO. HOLM.

BRIEFER ARTICLES.

The identity of *Asclepias stenophylla* and *Acerates auriculata*.—(See p. 124 *ante*.) Correction must be made regarding the name recognized. There is an *Asclepias auriculata* Kunth. So Engelmann's *Asclepias auriculata* is not tenable. Dr. Gray's name, *Asclepias stenophylla*, must therefore stand. I hasten to make this correction, the more since I hesitated at the time in following the dictum that "the oldest available specific name" must stand. It seems to me, from this present experience, that to take up "the oldest available specific name in the right genus" is safer and less liable to reconsideration.—J. M. HOLZINGER, Washington D. C.



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