

The aqueous infusion of the leaves contains some mucilage, and a body which belongs probably to the quercitrin or rutin class; the extract is not altered by ferrous salts; it is coloured greenish brown by ferric chloride, and gives with acetate of copper a yellow precipitate which is soluble in potash. Further experiments are required to show what this body is.

In an anatomical point of view buchu leaves appear at first sight remarkable by the large spherical oil vessels, which however do not claim any especial interest. If a transverse section of a *Barosma betulina* leaf be made, three layers can be discerned in the inner tissue. The thickest, occupying the middle of the leaf, is coloured green by chlorophyll, which is much less the case with the considerably smaller layer occupying the space between the chlorophyll layer and the under side of the leaf. A third layer, in a section prepared in alcohol or oil, is scarcely perceptible. It appears as a small uncoloured zone directly under the epidermis of the upper side of the leaf, in which, differing from the under side, no oil vessels appear. There may be seen also the fibrovascular tissue, the raphides, the cuticle and the epidermis constituting the skin tissue of the leaf.

If a section of *Barosma* leaf be placed in glycerine the epidermis of the upper side is raised by a mechanical action which resembles that which takes place when the epidermis of linseed, white mustard seed, quince seed, etc., is saturated with water. The delicate walls of the colourless cells in the last mentioned layer swell up, and protruding perpendicularly to the surface of the leaf, let a thick slime run out, in which the cell walls gradually disappear. At first there seems in this cellular slime an appearance of delicate stratification as in many other similar cases. The mucilage is not coloured by iodine, consequently it may be considered to approach nearer to cellulose. Under the influence of glycerine the mucilaginous layer of the leaves of *Barosma betulina* assumes the development described quite gradually; but it is produced much more quickly when the leaves are placed under water. In the latter case this layer occupies fully half the breadth of the section.

The leaves of the *Barosma crenulata* and *B. serratifolia* are, as is known, much thinner, being about half as thick as those of *B. betulina*. When these thinner leaves are placed in alcohol the mucilaginous layer remains scarcely perceptible, but in water it swells equally with that of the other kind. The breadth of this layer is then proportionately much more considerable in the thinner species, taking up two-thirds the breadth of the section of a leaf.

Whilst we are accustomed to find the epidermis to be the seat of the mucilaginous formation in the seeds, and to meet with special mucilage cells in the cortex, in the buchu leaf this function belongs to a row of cells (collenchyma) in the interior, without the epidermis having any share in it, if we, at least, leave out of consideration the