

Vines

B. 81

Miss Alice  
Cambridge  
Nov. 2.

My dear Mr. Darwin

I have to send you such information as I can with reference to the various substances which may be found in the cells of plants. I fear I can tell you very little that will apply to his particular case.

I cannot but think that the granules in question must be derived from the protoplasm, that is that they must be proteids - If they consisted simply of coagulated latex they might be produced as well in pure water as by the dilute carbonate of ammonia - and they might not dissolve in water or in dilute glycerin - The question is, are they the result of the contraction of the parietal protoplasm, or are they due to the chemical change of some part of the protoplasm? Is the whole phenomenon a purely physical or a

chemical one - In the first case the phenomenon would be simply what Dr. Crisp calls "plasmolysis" - that is a contraction of the "primordial utricle" under the influence of the salt, and the cell would in this case be readily restored to its normal condition by washing out the salt with water - In the second case, it might be assumed that a portion of the protoplasm becomes altered under the influence of the salt, so that it is insoluble in water or dilute glycerine - A substance of this kind is present in many albumen-grains of seeds - and it appears to be closely allied with the peptones.

I understand you might say that the substance dissolves in a mixture of glycerine & water - It would be well to ascertain if it disappears on treatment with water alone -

I am very sorry that I can give you no more than these general indications

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but I will try and do some thinking myself  
and then I shall perhaps be able to make  
some suggestion which will be more valuable  
than anything that I have seen able to say  
here -

The great difficulty is to account for  
the limitation of the phenomenon to certain  
cells - If it occurred in all, it would  
doubtless be more easy to hazard some  
explanation which might suggest  
useful reagents

Yours faithfully

Sydney H. Vines