linating—up to fifteen hours—different ovaries were injected with one of three solutions. Solution one was obtained by macerating one part by volume of seeds of the red variety in four parts water. Solution two was made by macerating the flesh of ripening fruit of the red variety and adding 50 per cent. water. Solution three was made by macerating pollen from the red variety in about nine times its bulk of water and filtering.

Seed was obtained from most of the injected ovaries, but the resulting fruits gave absolutely no trace of red coloration. The seeds from the treated ovaries were again planted in sterilized soil and gave nothing but normal Golden Queen fruit.

I have no doubt but that an experiment of this kind seems utter foolishness; most experiments yielding negative results do. Biologists, however, have generally accepted the suggestion of physiological chemists that life processes are in the nature of enzyme processes. Perhaps this is because one is behind a safe barrier of ignorance when he speaks of enzymes. But in the case of plant sap colors and animal pigments there certainly is reason to believe that their production is accelerated by enzyme action. If this is true, color-producing enzymes should show action comparable to that of other enzymes. As to the general properties of enzymes, however, little is known. Perhaps they can be stated in the following definition. Enzymes are catalysts that have thus far been produced only by living organisms. Two of their properties may be mentioned that especially interest us here: one, which they hold in common with inorganic catalysts, that of changing the rapidity of progress of a reaction already initiated, but not appearing in the final product; the other, that of possessing colloidal nature and a large molecule. The size of the molecules of all known enzymes and their colloidal nature makes it improbable that any extract containing a color-producing enzyme should reach the ovules of a treated ovary; it is not at all impossible, however, that such an extract might come in contact with the male nucleus as it is journeying from the stigma to the micropyle. Further, if one may argue from the work that has been done on artificial digestion, enzymes should be able to do their work after extraction. This work, then, simply shows failure under the conditions described. It may be that failure should always be expected, yet with proper analysis of some of the attendant physical and chemical processes, some valuable results might be obtained.

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TROUGH FAULTING IN THE SOUTHERN ADIRONDACKS[1]

FOR some years certain prominent physiographic features in the eastern Adirondacks have been regarded as due chiefly to normal faulting. Thus, many of the conspicuous mountain ridges, lakes, and drainage lines strike north-northeast and south-southwest and are undoubtedly largely dependent upon faults striking in the same direction. Within the pre-Cambrian crystalline rock area, it is almost impossible to work out these faults in detail, but, along the border of the Adirondacks, where the Paleozoic sediments overlap upon the crystallines, the faults are often well shown, especially where they affect both the pre-Cambrian and Paleozoic masses. Attention is here directed to the well-known series of Mohawk valley faults which nearly all downthrow on the east side, often have branches, and sometimes extend northward into the pre-Cambrian area. The faults and minor cross faults of Clinton county, near Lake Champlain, are also well known. Thus far no rather extensive trough faulting has been definitely described in the Adirondack region, the comparatively small trough block between the Little Falls and Dolgeville faults being perhaps the best illustration. It is the purpose of this article to call attention to a case of trough faulting on a large scale and also to point out the probable importance of this type of faulting in the Adirondacks.

Within the Broadalbin quadrangle (Fulton-Saratoga counties), which the writer is at present engaged in studying, detailed work

[1] Published by permission of the New York state geologist.

has shown the area to be unusual for its numerous faults, some of very considerable displacement. Two of the largest of these are the Noses and the Hoffman's ferry faults, which have already been described, the former cutting across the northwestern and the latter the southeastern portion of the Broadalbin quadrangle. The maximum throw of the Noses fault is about 1,500 feet and that of the Hoffman's ferry fault about 2,000 feet, with downthrow in each case on the east side. Recent work shows the Hoffman's ferry fault to extend much farther northward than formerly supposed, or from north of Galway to beyond Corinth and with increasing throw northward across the northwestern portion of the Saratoga quadrangle and producing the great scarp of pre-Cambrian rock. The Noses fault follows the base of the high (1,000 feet) escarpment of pre-Cambrian rock which extends from west of Gloversville to northwest of Northville.

Another dislocation of unusual interest is here briefly described for the first time and should be called the Batchellerville fault. From a point about two miles southeast of Northampton it strikes north-northeast for at least 8 miles along the Sacandaga river and through the village of Batchellerville. The maximum throw is nearly 1,500 feet and the high (1,000 feet) escarpment of pre-Cambrian rock is a very pronounced topographic feature. The most significant thing about this new fault is the fact that it downthrows on the west and is thus the only great Mohawk valley fault showing this characteristic. The Batchellerville and Noses faults run approximately parallel and are about six or seven miles apart, the great escarpment of pre-Cambrian rock of the one fault facing the equally great escarpment of the other. In other words we have here a fine illustration of trough faulting, the whole country between the Batchellerville and Noses faults being a great depressed fault block much of which now lies fully 1,000 feet below the level of the scarps on either side. A glance at the Broadalbin quadrangle will show the extent of this fault block, whose northern extremity is not yet known but which occupies at least 75 square miles or all of the region between the following points: 3 miles north of Batchellerville; 2½ miles northwest of Northville; 2 miles west of Mayfield, and 2 miles southeast of Northampton. On the state geological map the deep indentation caused by the northward extension of the Paleozoic rocks to Northville roughly corresponds to this depressed block, although recent mapping by the writer shows that the Paleozoic should extend at least 6 or 8 miles farther northward along the Sacandaga River. The surface rock over this depressed area is chiefly Little Falls dolomite, with some pre-Cambrian rock towards the north and some Trenton limestone and Utica shale towards the south. The trough block is not perfectly simple, because, on the west side especially, a number of minor fractures have considerably modified it and some of these minor faults are so arranged, as at Northville, that small trough fault blocks are included between them.

Eastward from this trough block and lying between the Batchellerville and Hoffman's ferry faults is a great upraised block of pre-Cambrian rock covering at least 100 square miles and including all of the high country in the northeastern portion of the Broadalbin and the northwestern portion of the Saratoga quadrangles. This uplifted block comprises the great tongue of pre-Cambrian rock shown on the state geologic map between Saratoga Springs and Northville.

The profound influence of trough faulting upon the topography in this region strongly suggests the occurrence of similar phenomena well within the Adirondacks. As Professor Cushing stated several years ago, the topography of the eastern Adirondacks often suggests faulting of this sort but positive proof has heretofore failed. The finding of such a large and clear-cut trough fault at the southern margin of the pre-Cambrian rocks greatly strengthens the belief that faulting of this sort has had an important influence upon the topography of the eastern Adirondacks.

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