

SOME VARIATIONS IN PLANTS.

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In the proceedings of the Indiana Academy of Science for 1905 and 1909 I have mentioned some variations in plants. Some of those have been noted and studied by de Vries, who considered the subject of such importance as to undertake its further study.

Flattened stems of various kinds are not infrequently found and sometimes twisted stems also. The latter de Vries¹ has noted in wild teasels and he was able by selection and cultivation to increase the percentage of plants of teasel having this peculiarity.

One instance of stem flattening, not due to a traumatic effect, is that of the blackberry. The stems of this plant are ordinarily more or less rounded in transverse outline and it would be interesting to see if this monstrosity could be increased in any way in plants grown from them as in teasels.

This same tendency to produce occasionally flattened parts occurs in dandelions. De Vries² was able to increase in various plants the percentage of flattened stems. Not infrequently the scapes of the dandelion are so united with others and so flattened as to be more than a centimeter in width.

Likewise deviations are often shown in the flowers of dandelions. This is especially seen in the union of two or more heads of flowers. Two, three and once five of flowers were more or less united into one and produced by this means a rather confused and irregular mass of many flowers. Here also was a flattening of the more or less perfectly united scapes. A sunflower which had several heads fused into one very large and curiously shaped mass was observed.

The union, however, of most flowers or branches in the neighborhood of one another are always of rare occurrence, as De Vries³ has mentioned is the case with most plants. An exception to this is seen in the case of

¹ De Vries—Species and Varieties, their Origin by Mutation. 1905, pp. 404, 405.

² De Vries—Species and Varieties, their Origin by Mutation. 1905, p. 411.

³ De Vries—Species and Varieties, their Origin by Mutation. 1905, p. 428.

some plants, however, which show a decided tendency to bring about a union of fruits, as in the strawberry, several of whose fruits and leaves at times grow together.

Deviations as to the time of the blooming of flowers are sometimes noticed. In Bloomington an apple tree that, besides blooming profusely during the regular time in spring, has two years bloomed twice each year. After blooming in the spring it produced a few blossoms again in August and September of the same year. After blooming the next spring an increased number of blossoms were produced in August and September as compared with the same time the preceding year.

It is well known that apple trees often bloom a second time in the fall in very dry seasons, but in this case the climatic conditions were just the reverse.

It will be interesting to see what this tree will continue to do in this respect. At the time that the second period of blossoming occurred the tree was bearing a fairly good crop of apples from the first blooms. The same may be seen in many other plants at times, as in violets, horse-chestnuts, anemones, gentians, redbuds, some primulas¹ and weigela.

The sudden and complete transformation of color in flowers from the normal sometimes occurs, as in *Achillea millifolium*, where the rays are pink instead of white.

The same is true of the common yellow adder's-tongue (*Erythronium Americanum*) which sometimes, though rarely, produces purple instead of the usual yellow flowers. When found such specimens should be transferred to a rich garden (if it is not possible to guard and grow them in their native habitats, which would be better) and cultivated and closely watched and protected in order to see whether they would reproduce the monstrosities again or even to a greater extent.

Apparent monstrosities are sometimes caused not naturally by the plant but are frequently caused by some sort of traumatic effect. This I have repeatedly seen in plants. Especially is this true in the more hardy plants that are able to bear a rather considerable injury without a fatal termination. The common iron weed (*Vernonia fasciculata*) shows frequently a branching only a short distance above the ground and below the usual branching, if partly crushed or otherwise injured.

Another instance of an apparent monstrosity, is the change brought

¹ Kerner, Vol. 1, p. 564.

about in *Ambrosia artemisiifolia* due to traumatic causes, as shown by A. C. Life.¹ This plant was injured by a wagon running over it and showed a number of abnormal conditions in which the reproductive primordia had a tendency to change into vegetative parts.

It is well, therefore, on finding any monstrosities of any kind to consider and inquire into the cause or source of the deviation and to try to ascertain whether these deviations are traumatic in origin or are inherent in the plant itself for some other reason.

¹ A. C. Life, Botanical Gazette, 1904, Vol. 38, pp. 383-384.

Blomington, Indiana.

