

In a paper read by Isaac Anderson Henry, Esq., President, to the Botanical Society of Edinburgh, 14th March, 1867, attention is specially called to the subject of the Influence of the Stock upon the Graft. In the *Gardener's Magazine*, vol. xiv., p. 430, it is stated that a male plant of the *Carica Papaya*, (a dioecious plant) bore female flowers at the extremity of its racemes, in consequence of having, two years before, been inarched upon a female stock of the same species, the part which bore female flowers having been produced subsequently to the act of grafting. Mr. Anderson Henry, of whom we have a lively personal recollection as one of the most scientific horticulturists in Scotland, goes on to observe:—

“The familiar case, of the *Cytisus purpurascens* or *Adami*, a hybrid between the common laburnum and *Cytisus purpureus*, affords another striking instance of the influence of the stock on the scion. For when grafted, as it generally is, on the more vigorous laburnum, shoots sometimes of a mixed character, partaking of both stock and scion, and sometimes of the laburnum pure and simple with its proper foliage and flowers, spring out from the branches of the *C. purpurascens*.

I have just read of the *Cytisus purpurascens*, or *Cytisus Adami* and stating, as I have done, on the authority of a notice given of it in Lindley and Moore's "Treasure of Botany," of its being a hybrid, I have this morning read another account of its origin in *The Farmer* of yesterday, where, reporting the proceedings of the last meeting of the Royal Horticultural Society, it is stated—"Mr. Lee, Cliveden, Bristol, sent most remarkably dissimilar examples of apples from the same branch of a tree of orange Pearmain, which was a fertile subject of comment at the meeting. The tree was the true variety, and the other samples were of a russety cast, instead of the bright crimson colouring common to the original. Rev. Mr. Berkeley instanced *Cytisus Adami* as a sport of a similar character, which is believed to have been produced by grafting *Cytisus purpureus* on the laburnum, and by some accident one cell of the stock and one of the graft having each become divided, and then united together, the result had been a plant partaking of the nature of both. Mr. Berkeley suggested that it would be most interesting to know the stock upon which the orange Pearmain had been worked." Whatever be its origin, the facts I have stated, and which probably many of us have seen with our own eyes, of the same tree producing three kinds of flowers, and two, if not three, different kinds of leaves, there can be no doubt of these having resulted from the operation of grafting. The two kinds of fruit, too, of the Pearmain seem to have arisen from the same cause. And it would seem, also, that many of the sports we see and

hear of in roses, in changing colour, and betaking themselves to a climbing habit, are due to the same cause."

The *Gardener's Chronicle and Agricultural Gazette*, of 20th April, quotes at length our account of Dr. Hamilton's apple freak, and goes on to remark that Mr. Anderson Henry's case of a male *Carica*, after being inarched on a female plant, producing female flowers at the extremity of the clusters of male blossoms, is not conclusive evidence that the grafting had anything to do with it. But suppose we set that case aside, the others cannot be so disposed of. It is obvious that in certain cases, rare though they be, the stock does exercise an obvious influence upon the graft. This much being ascertained, the real point to be determined is, how is this influence to be accounted for. The prevailing notion appears to be that such sports are produced by certain cells of the stock and of the graft having become divided, and reuniting as graft-cells. This hypothesis supposes that such a union-cell will have the power of originating half and half cells like itself. We doubt very much whether a half cell, or a cell whose membrane has been ruptured, has any farther power of development. In the ordinary process of union between a graft and a stock, it is seen that this union is brought about not by the union of half cells to half cells, but by the cohesion of one cell to another, which results from the passage of sap from the one to the other through their membranes, and the consequent formation in actual contact of new cells and of intercellular substance. Several years ago, we had an opportunity of examining carefully under the microscope, the grafted portions of a large number of Coniferae that had died in the Edinburgh nurseries and gardens, and as the disc-bearing wood-cells of these plants are remarkably characteristic, and differ widely in different species, they afforded excellent material for such an investigation. In every case the wood cells of the graft and stock were clearly defined and did not commingle to any great extent. Yet where there is a cavity under the bark of the scion, the wood cells of the stock will run up to fill it, and *vice versa*. In apple grafting, the spongy surface of the scion accommodating itself in its increase to the space allowed it in the cleft of the stock shows this very well, even to the naked eye. Now it is not at all improbable that the young wood of the stock may sometimes run up in a more or less perfect cylinder surrounding the young wood of the graft, or a few fibres may run up in this manner and become mixed with the newly formed wood of the graft. A few wood cells straying in this way from the stock might in time reach even the topmost branches, and would be apt to give out here and there a bud which would pre-

sent not the foliage and flowers and fruit of the graft, but of the stock. After carefully considering the whole subject in view of all the facts that are known, we offer this explanation as the one least liable to objection, and which seems to be more in accordance with the known facts of vegetable physiology than some others that have been brought forward. The subject is one of interest, and we should be glad to see it intelligently discussed.

PROVINCIAL AGRICULTURAL, AND INDUSTRIAL EXHIBITION.

The Secretary of the Board of Agriculture has addressed a Circular to the Secretary of every Agricultural Society in the Province, directing attention to the arrangements that are now in progress for holding a Provincial Agricultural Exhibition in or near the City of Halifax in the Autumn of next year, 1868. The Legislature has voted the sum of \$6000 towards defraying the necessary expenses. A Local Finance Committee has been organized in Halifax for the purpose of obtaining subscriptions from the citizens, and the Board of Agriculture is prepared to give all the aid in its power. It is confidently anticipated that every Agricultural Society in the Province will cordially co-operate in the scheme, and afford substantial assistance, by stimulating its members to prepare articles for exhibition, and by setting aside a portion of its funds for prizes or otherwise. The Presidents and Officers of all the Agricultural Societies of Nova Scotia have been appointed Members of the General Committee for carrying out the Exhibition.

In order that intending Exhibitors may have ample time for preparation, it is proposed to issue early this summer, the List of Prizes offered for competition. But before the Prize List can be prepared, it is necessary to ascertain what amount of funds will be available.

Secretaries are requested to take the earliest opportunity to bring this matter under the notice of the Directors of their respective Societies, with a view of ascertaining definitely what sum each Society will be prepared to vote, either from its funds or from the subscriptions of members and others who are interested in agricultural pursuits. The money will not be required till next year, and may be retained out of the Society's Annual Grant for 1867 or 1868, if so desired.

A Reply to the Circular is required on or before 20th June.