A MUTATING BLACKBERRY- DEWBERRY HYBRID

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MUTATIONS among the blackberries and dewberries, with the exception of chimeras, have been seldom reported. *Rubus laciniatus* Willd. is considered a cut-leaved form of the European blackberry, *R. fruticosus* L. Whether it originated from a seed or from a mutating vegetative bud seems to have never been recorded. A cut-leaved variety of dewberry of distinctly trailing habits has also found its way to the market and is grown mostly for ornamental purposes, but, like *Rubus laciniatus*, the origin of this dewberry is obscure and only a matter for speculation.

It was the writer's good fortune to discover in the summer of 1915 a similarly cut-leaved plant arising as a bud mutation from what appears to be a wild, natural, blackberry-dewberry hybrid. As this hybrid form is very common in the vicinity of Raleigh, N. C., no especial emphasis need be laid on the probable parental species. The plant was found growing on a high embankment on the railroad right-of-way of the spur that enters the State Fair Grounds at West Raleigh, N. C.

The plant when discovered possessed two canes, one normal, *i. e.*, with entire leaflets, and one abnormal, *i. e.*, with finely divided leaflets (see Figs. 19 and 20). As the plant possessed all indications of possible propagation by means of tip-layers, this method was at once resorted to and two new plants were thus secured.

In the late fall of 1915 the mutating crown was taken up and planted in the station experimental vineyard. The two new plants that were secured by means of tip-layering were planted in the horticultural grounds among five varieties of blackberries and three varieties of dewberries. All of the plants grew and reproduced the divided

THE CUT-LEAVED MUTATION

A one-year old cane showing the finely divided leaflets. (Fig. 19.)

A CANE FROM THE ORIGINAL PLANT

This shows well the arched cane. Note also the self-rooted tip-layer and the undivided leaflets. This plant produced the cut-leaved form by means of a mutating vegetative bud. Greatly reduced. (Fig. 20.)

INTERMEDIATE ATAVISTIC TYPE

This constitutes the first visible atavistic step of the cut-leaved form. (Fig. 21.)

EXTREME ATAVISTIC TYPE

The leaflets on this cane are undivided like those on the original wild forms. (Fig. 22.)

leaflets. The two tip-layered plants in succeeding years continued to reproduce themselves naturally by means of suckers and tip-layers, and these also produced the divided leaflets of the original mutation.

In the fall of 1919, two atavistic mutations were observed growing among the progeny of these plants. By careful study and root tracing, these atavistic forms were found associated only with those plants that had originated as suckers from the roots of one of the original tip-layered plants. One of these atavistic mutations affects the four lower leaflets only, these being entire, while the upper leaflet is more or less divided (see Fig. 21). This form might be termed an intermediate type. The other mutation consists of a complete reversion of all the leaflets to the original undivided form. This is the extreme type (see Fig. 22). All of the leaflets on these later atavistic

plants are uniform, and none exhibit the tendency toward segmentation.

From a horticultural viewpoint, these mutations are extremely interesting, and the finely divided leaf forms may even be termed ornamental. The canes normally grow arched, ascending about 2 to 3 feet high with short, leafy flower clusters. The foliage on the young canes appears by far the more ornamental because of the beautifully five-pointed and much divided leaflets. On the fruiting canes the leaves are less divided and less graceful, and therefore such canes ought to be removed soon after the flowering season. Fruit on these mutating plants, especially the cut-leaved forms, is very seldom produced, notwithstanding the abundance of pollen that is borne by the nine different varieties of *Rubus* that grow in close proximity—in fact within the same row.

HEREDITY AND ENVIRONMENT IN THE DEVELOPMENT OF MEN, by Edwin Grant Conklin, professor of biology in Princeton University. Princeton University Press, 1919. Third revised edition, Pp. 361, with 101 illus.

When Dr. Conklin's book first appeared in 1914, it met with a warm welcome, but much progress has been made since then in the study of eugenics, and an examination of this latest revision shows that the book has hardly been brought up to date. The principal changes have been made in the chapter on "The Cellular Basis of Heredity and Development," and Dr. Conklin's authority in this field makes what he has to say on the subject welcome. But the sections devoted to eugenics are inadequate at present, and any serious discussion of the application of eugenics is almost lacking. The book is still disfigured by a number of old illustrations

that ought not to be allowed to circulate in the present age of photography, though their offense is more esthetic than scientific.

The inadequacy of Dr. Conklin's treatment of his subject is more or less inevitable, since he writes wholly as a biologist, and the study of heredity and environment of men from a purely biological point of view is fraught with great difficulties. A book on the subject, to have much practical value, must be written largely from the biometric and sociological points of view. The author has perhaps made as much as possible out of the material available, but it will be a long while before the purely biological data available on man are sufficient to satisfy an inquisitive reader. Even of the material available, a more rigid selection should have been used, as in the enumeration of characters in man that are supposed to be inherited in Mendelian fashion.—P. P.