

## ORIGIN OF VARIETIES.

Varieties are originated in three different ways. First, from seed of fruit that came from flowers which have been open pollinated or pollinated naturally and which we shall call seedling varieties; second, by artificial cross-fertilization and hybridization, which we shall call cross-bred or hybrid varieties; and third, by sporting or bud variation.

### SEEDLING VARIETIES.

Each seed of an apple produces a different variety. Thus if there were six seeds in a McIntosh apple, every tree raised from these would bear different fruit.

Most of the named varieties of apples growing in America to-day were originated as seedlings. Our forefathers brought apple seeds with them from the old land and sowed them in this country. The young trees raised from these seeds grew up and bore fruit, and occasionally a variety of merit would thus be produced, and then propagated. In later times chance seedlings grew up in the fence corners and other waste places, and these also bore fruit and added their quota of good sorts. From trees like these have originated such fine varieties as Northern Spy, Baldwin, Fameuse, McIntosh Red, and many others.

Of late years more systematic efforts have been made to originate new varieties from seed. But the varieties of really useful apples which have originated in this way have been very few indeed. As an example may be given the work of the late Peter Gideon, of Excelsior, Minn., U.S., who devoted much time to this work. He published the results of his experience in the Thirteenth Annual Report of the Minnesota State Horticultural Society. The following are extracts from that report:

"Our efforts and trials in Minnesota began thirty years ago last spring by planting one bushel of apple seed, a peck of peach seed, and five hundred apple, pear, plum and cherry trees, and for eleven years thereafter planted each year enough apple seed to bring 1,000 trees, and in the time named frequent additions to the orchard of old named varieties—all southern or eastern grown trees and seeds, and all kept as long as they could be made to live in Minnesota, and to-day only two trees remain. One of these, the Wealthy, grown from a cherry-crab seed, obtained of Albert Emerson, of Bangor, Maine, of whom I obtained scions at the same time, from which I grew the Duchess, Blue Pearmain, and the Cherry-crab, all of which, combined, were the foundation of Minnesota horticulture, that to-day is the pride and hope of the Northwest. But since these varieties came into bearing we have planted only of our own growing of seed, with forty first-class varieties the result."

"Thus far it has taken from three to five hundred seedlings to give us one first-class apple, and that from seed taken from the best apples we had."

Although the Wealthy is probably the most valuable variety of its season in the colder parts of Canada and the United States, Gideon's attempts to produce a hardy late keeping apple of good quality were of no avail and even up to the present time there are few hardy winter varieties that can be recommended.

### SEEDLING VARIETIES ORIGINATED AT THE CENTRAL EXPERIMENTAL FARM.

At the Central Experimental Farm, considerable work has been done in raising seedling and cross-bred apples and some good varieties have been produced from seedlings of which 105 have been named. The results from cross-breeding will be found in the next chapter.

In the year 1890 an orchard was planted, comprising about 3,000 trees grown from seed imported from E. Goeppinger, Riga, Russia. The seed from which these were grown was said to have been taken from apples grown north of Riga, Russia. These began to fruit in 1897, when about fifty trees bore. The number of trees was gradually reduced by winter-killing, by fire blight, or were removed on account of