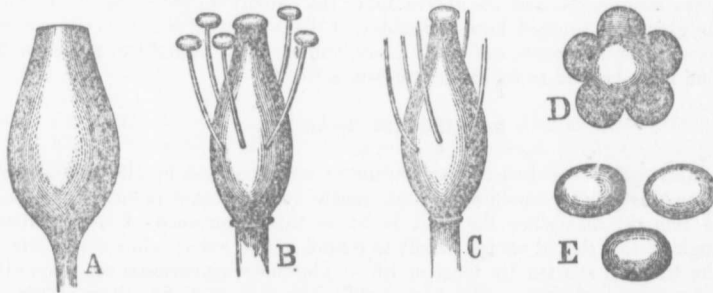


proceeding, which the gardeners of Holland and the Netherlands, soon improved upon, and they were the first to produce results of practical value, from this method of experimenting.

Within later times, the names of Mr. Knight and Mr. Rivers of England; Professor Van Mons, of Belgium, and Professor Kirtland of Cleveland, Ohio, stand out conspicuously among those who have done most to foster and advance this valuable art in its relation to fruit culture; while many others have been actively engaged in producing new flowers and vegetables by the same process.

Since the grape offers one of the most promising fields for the labours of the hybridizer, we shall proceed to describe the process as carried on in working on that fruit. The blossoms of the grape appear in long clusters, and are not at all conspicuous. The corolla or leafy portion of the flower, which in many plants is painted in such gorgeous hues, is here of a pale green, and instead of opening at the top, and expanding as in most other flowers, this opens at the sides below, and its several petals remain united at the top, and as the stamens lengthen, the whole corolla is pushed off in one piece, resembling in shape a little cap, which falls to the ground. Then the sexual organs are exposed to view, and were it not that the anthers which crown the stamens are of a bright yellow color, and much protruded, it would be difficult without a close examination to note the flowering process at all. The unexpanded flower is much like a little bud, and the whole bunch a large cluster of such.

FIG. 1.



In the accompanying figure, A represents one of the unopened flowers on an enlarged scale. As it approaches maturity, its covering is gradually ruptured and turns a little upwards. In a short time the cap is raised higher until it sits loosely over the tops of the stamens, and then soon falls to the ground, and appears as represented at D, when the stamens released from the bond which kept them together, separate with an elastic spring, and appear as shown at B. The body of B is the female organ of the plant, and is called the pistil; the lower portion is called the ovary, and contains the ovules, or bodies destined to become seeds, the summit, or crowning top, is called the stigma. The stamens springing from and surrounding the pistil, are the male organs and number five; the knobs on their tops are called anthers, and contain the fertilizing pollen. This pollen, when mature, causes the anthers to open, and their contents consisting of almost innumerable grains, are shed gradually. The pollen grains are shown at E immensely enlarged. When the stigma is fit for fertilization, it exudes a gummy fluid, to which the pollen grains readily adhere, and the stamens with their anthers so encircle it, that no matter how the flower may be situated on the bunch, one or more of the anthers will be placed directly over it, so that it can scarcely fail to become fertilized, when pollen grains are continually falling from above and around it; and while insects are ever busy in travelling from flower to flower, and knocking the anthers about the stigma with their legs and wings. After the pollen grain has become attached to the stigma, it begins to absorb some of the moisture it finds there; and a process of growth or germination begins. The pollen sends out a minute fibre or thread, which penetrates the substance of the stigma, and then goes on lengthening downwards, until it reaches the embryo seed contained in the ovarian cavity which it enters and fertilizes.

This is what occurs in the ordinary course of nature, but when it is desired to produce an artificial cross, the male organs of the flower must be removed before the pollen is ready to be shed, and to do this we must begin early. A pair of fine pointed forceps, a magnifying

lens, a steady hand, comprise all the tools required to be ready to open; the main ones to the points of doing this, great black and white appearance shown thus prepared, the application of the used on account of grains which are. If the buds are second one a day the bunch be left val some insect n its legs or wings all the results un

Suppose it is tender, Black Ha the Clinton, and for the female; if constitution, main is more influenced haps before the ti the expanded flow part of the vine a charged, which wi appreciable quanti the light. It will French operators When it is wished camel hair pencil c chances of success, about a fortnight, pollen. Then the sunshine and air; vent its being dem

When the berry will soften the hard good growth of from will be much greater which the experime been crowned with longer time must el

Scarcely any of advantage is taken of selection, which is the Delaware grape, them, and the fruit c or purple, or with th s those of colour.