INTRODUCTION TO DAYLILY HYBRIDIZING

Since the early twentieth century, the hybridizing of daylilies has become increasingly popular, a task no longer left to a select handful of professionals but engaged in by hobbyists and backyard gardeners all over the United States and world-wide as well. The American Hemerocallis Society, the official registrar of daylilies, now has nearly 75,000 daylilies on its records, each genetically distinct from the others, and all the product of human hybridizing.

The variety in color, form, and other traits is simply astounding! In practice, at any given time, only a few thousand of these are available to the public for personal acquisition. Some fall out of fashion, or too few of others are raised to sustain their commercial usefulness, and they disappear from the daylily market nearly as quickly as they appeared. Even so, having several thousand varieties of daylilies available from which to choose as plants for one's garden is quite an ample selection.

Creating a new cultivar (cultivated variety) is a very simple task--in theory. For the sake of illustration, imagine two different daylilies--one with a yellow flower, one with a red flower. We will make the yellow one serve as the pod parent and the red one as the pollen-donating parent. We go to the red daylily and remove one of the six filaments with a simple pinch midway along the thin tube-like structure, being careful not to bump our fingertips against the oblong pollen-laden anther affixed to the tip of the filament. Then we carry that over to the yellow daylily bloom and touch the anther to the very end (called the stigma) of the single, long, slender tube (called the style), and dab the pollen from the red flower onto the stigma.

It is the crossing of two different daylilies that creates a new cultivar.
Unseen by the eye because it happens at a microscopic level, the pollen grains deposited onto the stigma will rest in place and be moistened by a clear fluid exuded from the stigma called "stigmatic fluid." Then a tiny door, called a "stoma," in the shell of the pollen grain opens up, and from within the grain a single cell of germ plasm will begin to grow its way down inside the style until it reaches the ovary, in which very tiny eggs (unfertilized seeds) are attached. The cell from within the pollen bears the "flower daddy's" genetic material. And if the journey has been successful, the "mommy flower's" egg will be fertilized, and both the pod and pollen parents' genetic material will be recombined to produce a viable seed. Those fertilized eggs (seeds) will grow and swell, and the small green pod will gradually enlarge on the flower scape.

Just as every child created by two human parents looks different from its mother and its father and from each of its siblings yet bears some resemblance to them, so it is with each seed inside the daylily seed pod. A given daylily pod may hold from three to thirty seeds, divided among its three small chambers. Each individual seed's flowers will look slightly or even dramatically different from those produced by any other of its siblings.

In the case of our hypothetical crossing of a yellow and a red daylily, you might imagine that all of the resulting offspring will be orange. After all, if I mix yellow and red paint together, the result will be some shade of orange. In practice with daylilies, that's not exactly the outcome. Some of the offspring will indeed be orange, but some will probably be red, some will be yellow, and none of them will look exactly like the others. It is this unpredictability of outcome that makes daylily hybridizing at once so exciting and so vexing. Why is it exciting is self-evident. Seeing one's daylilies babies mature and reach the day of presenting their first blooms is akin to Christmas morning! One is seeing a daylily that has never before existed anywhere in the world at any time, and the thrill is quite overwhelming.

Why is it also vexing? Most serious hybridizers carefully select which parents to cross with the intent of bringing out or passing along certain key characteristics of the parents to their offspring. For instance, perhaps a hybridizer likes the blooms of the mother plant but would like them to appear on the taller scape height of the father plant, and thus makes the cross of the two in the hope that the trait for taller scape height will come to the fore as the genes mix during the formation of the seeds. Perhaps it will, perhaps it won't, and perhaps it will in a few of the offspring but not in all of them. The dedicated hybridizer will probably use those few kids who do show an increased scape height in making yet another cross with the taller parent daylily to see if doubling up on the height-determining genes will create the desired outcome in the next generation of daylily kids.

Even this brief sketch helps one appreciate that creating a cultivar with all of the desired traits can be a lengthy undertaking requiring tremendous patience and diligent observation of details. It is easy to make more daylilies from seeds, but it is difficult indeed to make good daylilies and even harder to make great ones. It is not uncommon for a hybridizer to spend ten years coming up with exactly the right daylily that merits being registered and introduced to the market.
Here in Michigan, it typically takes two full summers for a seed planted in the spring to reach the point of maturity as a blooming plant, and often it can be three years. To perfect certain traits in the new cultivar means repeating the two-to-three year wait all over again, and quite possibly yet once more, before the hybridizer's dream becomes a reality in his or her garden. Then the ideal bloom's plant must itself be grown for several years more to produce enough fans to make it possible to offer it on the daylily market. Realizing the amount of time and labor involved in creating new daylilies may put into perspective why newly introduced daylilies command a high price!

This brief sketch of the hybridizing process has left out many crucial details.

For one, daylilies exist in two main types of ploidy, referring to the number of paired chromosomes carried in their cells. Without getting lost in the complexity of genetics here, suffice it to say that daylilies are either diploid or tetraploid. Diploid daylilies will not cross with tetraploid daylilies. In short, one has to know the ploidy of the parents before attempting a cross of the two. Fortunately, that information is part of the information recorded for each registered daylily, so one can look up that factoid without knowing or understanding anything about genetic science and can thereby avoid making the mistaking of trying to mate diploids with tetraploids.

For another, the mixing of genes governing certain traits is a great mystery. As already described, it is a gamble whether one will produce offspring that has the traits one wants in a daylily. It takes years of experience to learn which traits carry forward readily and which do not, and even then one's knowledge is not a guarantee by any means--only a probability.

There are no shortcuts, and there's no single manual to consult that holds all the keys and tips to success. The best way to become a hybridizer is to learn from other hybridizers and to borrow from their wisdom in one's own pollen dabbing experiments. Most hybridizers are very willing to answer questions from beginner dabbers, and asking can lead to very rewarding friendships as well as an enriching of one's understanding of daylilies. Joining a local daylily club is the perfect way to come into contact with other daylily enthusiasts, and a listing of those clubs can be found at the American Hemerocallis Society's website under "Regional Information." Here is the link: http://www.daylilies.org/AHSreg.html

While daylily hybridizing requires patience, it is enormously rewarding to see the fruits of one's labors coming forth in the garden. And if one is growing hundreds of daylilies seeds at a time, the joy of discovery is multiplied and extended as each comes into its own at a slightly different time and shows its face to the world for the very first time. It truly can feel like Christmas morning nearly every day all summer long!
And lastly, here is one example of a cross. On the left is SUMMER STAR, the mother (pod parent). On the right is DANCES WITH GIRAFFES, the father (pollen parent). The third photo is one of the offspring of this cross, soon to be registered as SCRAMBLED GREEN EGGS.

SUMMER STAR X DANCES WITH GIRAFFES

SCRAMBLED GREEN EGGS

By convention, the pod parent is always listed first, then the pollen parent, when detailing the parentage of a cross. The letter X between the names indicated "crossed with." It is interesting to study each parent's photo and compare them with the offspring's picture, noting what characteristics carried over and which did not. Would you have predicted the outcome? Dedicated hybridizers will keep records of the crosses that they make, tagging the blooms in the garden at the time of dabbing pollen and later transferring the information after pod harvest to a more permanent record so that parentage can be tracked and, perhaps one day, forwarded to the American Hemerocallis Society when registering the cultivar officially.