

46. *On the Inheritance of Double Flowers of the Japanese Morning Glory.*

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The Japanese morning glory, *Pharbitis Nil*, shows conspicuous variation in the type of doubling. Among the common doubles, we have petaloid flowers, which can be grouped into two forms, the common and "Kujaku" doubles. Each flower acts as a simple recessive to the single condition. The degree of petalody, however, is very remarkable, representing continuous gradations from a minimum extreme of false singles having quite normal stamens to the other maximum limit of full doubles containing no shadow of the male organ. If the double segregates are of weak petalody, their ratio is usually somewhat lower than the requirement, as some false singles occur. The "Kujaku" double is always found to accompany the pear leaf. The "Fukiage-Kujaku", an excellent double, is a "Kujaku" double with reversed cup tube. In our genetic analysis, the "Fukiage-Kujaku" revealed itself to be doubly recessive to the single flower with normal straight tube.

The "Botan" flower, due to proliferation, is quite sterile, owing to the complete conversion or replacement of the sexual organs by the petaloid filaments and tiny buds, and therefore, the form is only obtainable through the "parental stock", from which the "Botan" segregates appear at a recessive proportion in its offspring. This type of doubling is not very attractive by itself but when it combines with "Shishi" we have a "Shishi-Botan" flower, which is very showy. The segregating proportion of "Shishi-Botan" is approximately a double-recessive ratio. The specimens commonly come to bloom in rather simple "Shishi-Botan", but some in monstrous complications. Our fanciers of this plant much prefer the latter flowers in their gardens.

In the combination of "Shishi" and petalody, we have a "Shishi" flower with petaloid stamens. The effect of the factor for petalody, however, is not outwardly visible in the "Botan" or "Shishi-Botan"

flower. The "Shishi" flowers exhibit marked variation in their monstrosity, due to the interference of modifiers, which affect the "Shishi" petals with the cooperation of environments, under which the plants are raised. The "maple" or "willow" factor strengthens the monstrous quality of "Shishi" in producing definitely or more irregularly split corollas.

The "Tenaga-Botan" flower is a double producing no seeds. The type is obtainable in a simple recessive proportion among the progeny of the heterozygous "parental stock". The "Tenaga-Botan" bears particular leaves with long petioles and makes a stunted growth. The seedling of this double can be identified with its unique-shaped cotyledons. Selection in the seedling bed is also available with the "Shishi" flower, as its cotyledons have characteristic appearance. Such is neither the case with the petaloid double nor the "Botan" flower, as the cotyledons of which are perfectly normal.

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