

LENGTH OF LIFE OF ARISAEMA TRIPHYLLUM CORMS.

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In the summer of 1908 the writer's attention was called to the similarity in the number of growth periods of *A. triphyllum* corms coming from plants that must have been of widely different ages. Three years' observation of mature plants in the field and garden as well as a study of seedlings has led to the conclusion that the corm has a fairly well fixed life period.

The underground stem or corm of *A. triphyllum* is an irregular, flattened, oval body composed of an inner starch bearing parenchyma mass, traversed here and there by vascular strands, covered with a thin layer of brown, scurfy cork, and surmounted by a conical bud. The lower side is flattened, much wrinkled and often bears patches of loose, disorganizing cork tissue. The bud at the top is rather large—in mature plants measuring from 8-25mm. through the base—and contains the leaves and flowers for a succeeding year's growth inclosed completely by closely convolute, thick, fleshy scales. This bud is formed in late spring, within the petiole or petioles of the aerial leaves, but is left exposed by their decay. The roots grow out from the base of the bud scales and so are quite near the outside of the petiole bases.

The falling away of leaves and roots at the end of the growing season leaves a scar, marked by a depression in which the traces of vascular bundles are clearly visible, and extending entirely around that part of the corm just newly formed below the petiole bases. This large scar is a readily usable guide in counting the number of annual growth periods in a given corm. The number of growth periods may also be determined through the following facts. Vigorous plants usually form one or more lateral buds of varying size at the base of the petioles each year. These buds are carried down, with very little change in size or appearance, by the growth of each succeeding year, and so form a record. The interesting fact has been observed, that after a corm has reached four growth periods, its size seems to have nothing to do with the number of such periods, and that mature plants under observation for three years show the same number of record scars as at the beginning of the observation period. It has

also been observed that the lateral buds remain dormant until detached from the parent corm, and that four year old buds at the end of their fourth season are attached not to the corm but to the disorganizing cork fragments at its base.

An examination of the internal structure of mature corms at different times in a growing season shows the following features. At the beginning of growth in March the starch-filled parenchyma is a homogenous mass. When the flowers and leaves are just above ground a lower region of the parenchyma, corresponding to the four year old portion, shows signs of softening, becoming more translucent and containing less starch. As the season progresses this condition of change increases until at or soon after the time of fertilization of the flowers, there is little but disorganized parenchyma and scattered vascular strands in the oldest portion. Examination with the microscope at this time will show that a complete separatory layer of phellogen has been formed so as to extend between the three and four year old portions, cutting off the older and protecting the younger with a layer of cork cells.

The formation and growth of *A. triphyllum* corms is greatly influenced by food and climate. The variation in size of mature corms may very probably be the direct result of these influences. Certain it is that some corms lie dormant one year or longer and then grow vigorously. Then again conditions might require an extra amount of reserve food for the perfection of fruit in some unfavorable season and so shorten the time of some growth zones. In the majority of cases, barring very unusual conditions, regardless of the number of years since the germination of the seeds from which they sprung or since their separation as lateral buds from mature corms, the underground stems of *A. triphyllum* are four years old.