leaf blades, staminate flowers with 3–6 separate sepals and no vestige of the gynecium, and a very short life as compared with the carpellate plant.

Some staminate plants produce only pure staminate flowers, the expression being purely male, others at first produce besides staminate flowers some abnormal, intermediate flowers with structures differentiated as part ovulary and part stamen, or with normal stamens and a vestigial ovulary which usually has normal stigmas. Frequently ordinary stamens are produced ending in normal stigmas and occasionally a pure carpellate flower with the typical sheath-like perianth is developed. The staminate, intermediate plants exhibit various degrees of female expression but apparently in all cases have a strong tendency to become more and more staminate as the blooming period advances, so that at the end only normal staminate flowers are produced. The progression of the sexual state is from femaleness to maleness.

The carpellate plants usually produce nothing but carpellate flowers at first. Occasionally, however, there is a plant which will immediately begin to grow taller than the average carpellate plant and develop stamens in some of the flowers. These plants appear somewhat intermediate not only in floral development but also in vegetative characters. The vast majority, however, of the carpellate plants develop no such characteristics but begin to produce normal carpellate flowers and seeds and continue with the typical carpellate appearance. After the carpellate plants are well advanced in age, many of them begin to show a change in sex and develop stamens or staminate flowers. Some begin the reversal at a comparatively early period, others not until the very last flowers are produced. Some individuals produce only imperfect stamens, apparently with defective pollen and with indehiscent anthers; others produce normal staminate flowers with dehiscent anthers and apparently normal pollen. In these normal staminate flowers, the perianth consists of typical, separate sepals exactly similar to those in normal staminate flowers produced on staminate plants. The reversal from femaleness to maleness is, therefore, of every degree of intensity or completeness both in the number of flowers produced and in the degree of perfection of the sexual structures themselves.

A number of individuals appeared normally carpellate and produced 2 or 3 normal seeds at first and then gradually changed to the staminate condition until finally before they began to die of old age purely male sex was being expressed. Nothing but typical staminate flowers with dehiscent anthers was being produced. Femaleness had been changed to maleness. In one plot over 50 per cent. of the carpellate plants were finally reversed in their sexual state to a greater or less degree.

It is evident, therefore, that in these experiments we have a complete reversal of sex from female to male in a species characterized by an extreme dimorphism and this without any manipulation of the plants whatever except that they were grown out of season with a deficiency of light, and a shallow soil heated partly from below.

Female heredity is at first active and male heredity is latent, and finally male heredity is active and female heredity is latent. The change takes place in the vegetative body and is plainly caused gradually by an internal change of the physiological state or condition of the meristematic tissues from which the flowers are produced.

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SCIENCE

A Weekly Journal devoted to the Advancement of Science, publishing the official notices and proceedings of the American Association for the Advancement of Science

Published every Friday by

THE SCIENCE PRESS

LANCASTER, PA. GARRISON, N. Y.

NEW YORK, N. Y.

Entered in the post-office at Lancaster, Pa., as second class matter