

## THE DIURNAL NODDING OF THE WILD CARROT AND OTHER PLANTS.

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Many plants exhibit periodical movements during the twenty-four hours of a day. Among the more interesting of such movements is the daily nodding in the evening, shown by a number of species common along the roadside.

During the past summer the writer obtained considerable pleasure in making observations on some of the common plants of Columbus. One of the most striking in this respect is the wild carrot (*Daucus carota* L.) In thrifty plants there are usually a number of branches which all begin to nod at an early age and continue the habit until the plant is in full bloom. The best time to study this peculiar phenomenon is from the middle of June to the middle of July. The long peduncles, bearing the young umbels nod before the sun goes down, the curving being prominent by six o'clock. The various branches nod in a radial manner outward from the central axis of the plant. The length of time taken to develop the curve was not ascertained but it was observed that the peduncles are erect in the morning and remain so during the day. Late in the afternoon, the curving begins and continues until in some cases the peduncle describes nearly a circle. The nodding is most striking just before the blooming period in plants with numerous long peduncles. At this period the umbel frequently moves through an angle of over 270°. Frequently the upper face of the umbel touches the side of the peduncle. The diameter of the curve in a medium sized peduncle is about two inches. The curved peduncle is quite rigid and should show an interesting cellular condition if properly studied. The diurnal nodding of the peduncle stops at the time of anthesis, although there are subsequent interesting movements in the rays of the umbel itself at a later period.

The common Dogfennel (*Anthemis cotula* L.) also has the diurnal nodding habit. Its numerous lateral branches bearing heads of flowers nod in the evening and at night and become erect again early in the morning. The nodding takes place in the same radial manner as in the wild carrot.

In *Lactuca hirsuta* Muhl., before and during anthesis a decided drooping or nodding of the large flower cluster occurs, the main axis bending about six inches from the tip. The stems were found erect in the morning. *Euphorbia nutans* Lag., as its name indicates, also has a nodding of the tips of the stems each evening and a return to the erect position in the morning.

One may well ask as to the purpose of the nodding habit so prominently developed in the wild carrot. Is the cause of the

movement the lowering of the temperature, the decrease of light, or the fatigue of the protoplasm? These problems are for the plant physiologist. But anyone will find the habits interesting in themselves. They show that there is a real plant behavior as well as an animal behavior and by taking an evening ramble before and after sunset the fact will become evident that many plants change their positions with the coming of the night even as do most of the animals.

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