

A RECORD OF OBSERVATIONS ON THE DANDELION.

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The following observations were made by my son, Don C. Simkins, upon two dandelion heads. One was studied from May 10 to June 4, 1901; the other from May 12 to June 4, 1902. Observations were recorded three times a day—morning, noon and night. In the notes below "No. One" refers to the first head and its scape; "No. Two" to the second head and its scape. No. Two was the more typical specimen.

The dandelion grows in a funnel-shaped opening which it makes at the surface of the ground. No. One remained in this funnel for two days after being discovered, without lengthening its scape; No. Two did the same. It was five days after No. One was discovered before it bloomed; after No. Two, eight.

Beginning at seven o'clock in the morning, it took one hour for the head of No. One to open the first morning it bloomed, and in about five hours it began to close. It took one hour to fully close. Only the outer half of the flowers bloomed the first day. In opening and closing, this head made the same record the second day, except that the inner half of the flowers were also in bloom. On the third day the head opened a short time. No. Two made the same record. On some days the dandelion remains in bloom until later in the afternoon.

After flowering No. One required fifteen days to ripen its seed; No. Two, nine. The cold rainy weather delayed No. One. When the fruit on No. One was ripe it took forty minutes for the head of pappus to open. The plant made a mistake, for it rained and washed a part of the seed off, while a part hung on for three days; but possibly it could not wait any longer, for it had been delayed by four days of rainy weather, except the day before the head opened. No. Two opened in the same time, the wind rose and the parachutes were carried away—all on the same day. In fine weather you will see many pappus heads in the forenoon and but very few in the evening. All the seeds in Nos. One and Two seemed to mature. This plant is so very numerous that many insects are induced to aid in pollination.

During some days, as well as some nights, the scape does not grow. In No. One it grew during ten nights; in No. Two, during thirteen. In No. One it grew during seven day-times; in No. Two, during nine. At certain times the scape makes a rapid growth. No. One, on each of two non-successive nights, grew one and one-half inches, and during another night two inches. No. Two lengthened one inch on each of two non-successive nights, two inches on one night, and four and one-third inches

during another. No. One never grew one inch during any daytime except once; No. Two lengthened one inch in one daytime and two inches in one other. No. One lengthened rapidly during the last three days and nights just before it completed its growth. No. Two did the same, except that it grew an eighth of an inch after the seed had been scattered, probably owing to a shower. No. One did not grow any for three days and nights just before opening the head of pappus, but the weather was cold and rainy; No. Two lengthened very rapidly during the three days and nights just before scattering the seed, probably because the weather was warm and windy, with a slight shower the night before the head opened. No. One did not grow any during the three days and nights just after blooming, probably because its strength had been exhausted in flowering; No. Two did the same. This was the longest period of rest from growth that either plant took. The scape of No. One grew over an inch during the days and nights the head was in bloom; No. Two, two inches. No. One grew one inch during the day and night just before blooming; No. Two, four and one-third inches the night previous to blooming—its most rapid growth.

In No. One, previous to blooming, the scape bent over to lower and protect the head, but became erect the night before the head opened. By this process the head was elevated over an inch. No. Two did the same. Along the roadside this process often makes a difference in elevation of the head of four inches, especially if the neighboring vegetation is growing. After blooming the scape of No. One again flexed to lower and protect the head while the seed should ripen. By the scape's assuming a compound curve the head stood erect. The scape became straight and vertical two days before the seeds were to be scattered, thus raising the head an inch more than it otherwise would be. Along the roadside this change in the direction of the scape often elevates the head as much as six inches. The record for No. Two was the same as for No. One.

In No. One the corollas died and dried in about five days after blooming, and at the end of three more the growing pappus stalks pushed them off; for No. Two no record was made. In No. One the plant was five days in reflexing the scales of the outer involucre; but after they were once down they never again became erect. The same was true of No. Two. In No. One the scales of the inner involucre curved outward near their middle to permit the flowers to bloom, but became erect in the evening and at night to close the flower. They also remained erect while the seed was ripening. When the head of pappus was ready to come out this was accomplished by the receptacle's changing from a concave disk to a convex one. This mechanical device not only opened up the head of pappus, but reflexed the involucre at

their base. They never again left this position. No. Two made the same record. The pappus disk is also concave until it becomes convex to help open the pappus head. While it is concave the pappus hairs stand erect and parallel; but by becoming convex the disk forces the hairs to radiate like the stays of an open umbrella.

In No. One, the head faced the sun from morning until noon while in bloom; No. Two did the same. But this seems to be a rule to which there are exceptions.

After the seed is scattered the scapes soon wilted and fell to the ground.

In No. One the full length of the scape was twelve inches; in No. Two, nineteen inches. The grass was taller around No. Two. In tall grass or in a pile of rails, the scape may reach a yard in length and stand erect most of the time, while on lawns that are frequently mowed they are usually short.

No. One grew in the back yard, on the northwest side of its bunch, and when the scape flexed it always bent in that direction. No. Two grew near the same place, on the south side of its bunch, and when the scape bent it was always in that direction. Of the 76 records made of No. One, 28 were marked "rainy" and 18 "cold"; in the 68 made for No. Two, 11 were marked "rainy" and 8 "cold."
