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Some Winter Flowering Plants

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SOME WINTER FLOWERING PLANTS

R. W. POULTER

While collecting native specimens for a herbarium during the fall of 1923, it was noticed that several species bloomed quite late, and would stand freezing and thawing time after time, without apparent damage to the flowers. A geranium which was left out of doors in a flower pot, and lived until the latter part of December, aroused our curiosity as to just how much cold weather some plants would stand.

Accordingly, an investigation problem was planned and a number of patches of growing plants representing four species, Field Penny Cress (*Thlaspi arvense* L.), Shepherd's Purse (*Capsella Bursa-pastoris* Medic.), Dandelion (*Taraxacum officinale* Weber.) and Common Chick weed (*Stellaria media* (L.) Cyrill.) were located and visited frequently through the winter. The following paragraphs discuss briefly some of our observations.

FIELD PENNY CRESS (*Thlaspi arvense*.)

Thirty-one stalks of field penny cress about sixteen inches high, with clusters of flowers at apex, were in two bunches about fifty feet apart along a railroad track and on a ridge at least a foot high. There was little or no frost in the ground up to December 31. Before this date the plants froze and thawed seventeen different times and were in bright sunshine almost every day without apparent damage to the flowers. On this date the temperature fell from thirty-four degrees above zero to zero. About two inches of snow covered the ground. The tops of the plants bearing flowers, being uncovered, were exposed to the winds. From December 31 to January 6 inclusive, the weather was very cold. A warm period followed from January 7 to January 11 inclusive, during which time the plants froze and thawed four different times, being exposed to the bright sunshine most of these days. At the end of this rather warm period, fourteen of the stalks had died, the lower leaves of the remaining plants had lost their chlorophyll, but had living buds at the apex, and on most of these well-developed flowers were present. From January 16 to January 22, inclusive, there was another cold period, and the

next two days, January 23rd and 24th, the plants thawed and eight more fell to the ground. At the end of a seven-day warm period, ending February 3rd, the remaining nine plants looked the worst they had during the winter, and a few of the terminal buds had died. By the middle of February only four plants remained alive and only one of these bore flowers and these were dwarfed. No seed pods were formed during the winter. No more well-developed flowers appeared until April 3rd. These came from little seedlings of the preceding fall. The tops of the seedlings grew during the winter as they were a little more protected and were the first to bloom when spring opened up. Two of the plants which bloomed during the winter lived through to warm weather but in both cases the terminal buds were dead, and short lateral branches bore the flowers. The roots that lay dormant through the winter sent up fresh shoots bearing large clusters of flowers while those shoots from the winter blooming plants were very small.

SHEPHERD'S PURSE (*Capsella Bursa-pastoris* Medic.)

Several specimens of shepherd's purse were noticed blooming on December 20. No more were noticed until February 16. On this date three plants about three inches high were found with developed flowers at apex and seed pods about half natural size hung below, which showed evidence of the plants being in bloom for some weeks previous. They were in a low place about five inches deep. February 16, the depression was filled with water which froze, and for the ten days from February 16 to February 26, two entire plants remained frozen in the ice. At the end of this time the ice melted and the plants appeared unharmed, and produced a few more flowers. These flowers as a whole were very much under normal size, the petals extending but little beyond the nearly normal sized sepals. The filaments were somewhat shortened. The dissection of several seed pods showed that the ovaries were either not fertilized or that the cold weather was too severe for their development. No more shepherd's purse was seen flowering until March 8th and in about two weeks numerous plants were in bloom.

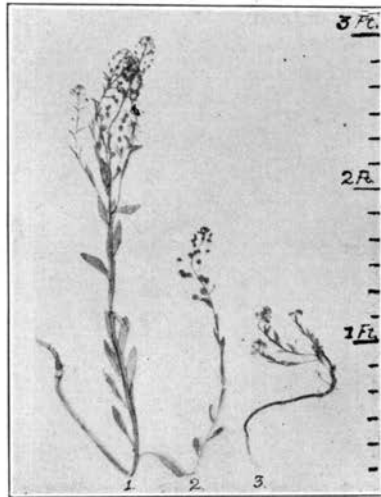
COMMON DANDELION (*Taraxacum officinale* Weber.)

Six dandelion plants were seen on a south slope of a railroad cut. They acted much in the same manner as the field penny cress and shepherd's purse. All six plants bloomed up to Decem-

ber 31st and formed seeds. During the seven cold days from December 31st to January 6th, the plants showed little or no activity. At the end of the five-day warm period from January 7th to January 11th, four of the plants had heads in bloom. The top leaves died, leaving only a few green leaves under them. No new buds appeared after January 11. The remaining heads that bloomed were practically sessile. The outer flowers of the head bloomed first and would often be dead before the center flowers bloomed. In some cases the center flowers never bloomed. On February 15th, the last of these flowers bloomed, and was the first plant since December 31st that had nearly all the flowers on the head in bloom at that time. Out of the twelve heads examined which bloomed after January 6th no seeds were formed. February 12, two dandelions were found in bloom east of a large building.

COMMON CHICKWEED (*Stellaria media* (L.) Cyrill.)

These plants stood the winter the best of the four species studied. They were distributed in large patches throughout the region under observation. The plants which were observed in particular were along the north side of a large building and were



FIELD PENNY CRESS

Thlaspi arvense L.

The three specimens were collected May 1, 1924. No. 1 is a specimen from roots which lay inactive during the winter. No. 2 is a specimen from a seedling of the preceding fall. This plant grew during the winter and produced well-developed flowers April 3rd. No. 3 is one of the two specimens that survived the winter and produced flowers every warm period during that time.

exposed to the cold weather. On February first eighteen flowers were counted on a patch a foot square. It is not certain that any of these winter flowers developed seeds. Upon February 12, the flowers were under a snow drift and when uncovered the flowers seemed to be in as good a condition as when the snow came a few days before. The petals did not project beyond the sepals, but the flowers opened and the anthers shed pollen. These flowers kept on blooming every warm day during the winter and were in good condition when spring opened up. The plants that were covered with snow part of the winter produced many more flowers than those fully exposed.

These four species have been noticed to be in bloom every month of the year. In many cases a flower would partly open and freezing weather would stop its growth, and when a few warm days would come the flowers would go ahead and bloom, the anthers shedding pollen.

It was at first supposed that the more succulent plants would fare the worst in freezing weather but this did not seem to be the case as the common chickweed, which contained the most moisture of the four species studied withstood the winter the best.

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