A STUDY OF THE GENUS ANEMONE

AS FOUND IN MANITOBA.

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THE ANEMONES OF MANITOBA.

The genus Anemone, although represented by only six species in this province, well deserves our careful consideration, if only for the reason that one of its most widespread members, Anemone patens, commonly known as the prairie crocus, has very fittingly been chosen as the floral emblem of Manitoba. While winter's snow yet lingers in the valleys, and not a green blade of grass can be found, this hardy little flower emerges from its furry coat, disregarding the chilling wind, and clothes every sunny hillside with lilac, encouraging us to believe that it is really Spring.

The white wood anemones, A.canadensis and A.quinquefolia, though more retiring than their predecessor, have, by the size, purity and profusion of their blossoms, been rendered very attractive, and are well worth a detailed study.

The remaining three species, A.cylindrica, A.multifida, and A.virginiana, while their flowers are not so large or conspicuously colored, are noticeable to the most casual observer, and intensely interesting to a botanist, by reason of their curiously woolly fruits, which often remain on the plant over the winter.

The position of the anemones in the systematic order of plants is as follows:

Division II	Spermatophyta.
Subdivision II	Angiospermae.
Class 2	Dicotyledonae.

Sub-class 1.	Archichlamydeae.
Order,	Ranunculales.
Family,	Ranunculaceae.
Tribe,	Anemoneae.
Genus,	Anemone.

(Gray's Manual of Botany, 7th edition, 1908.)

According to the chart devised by Mez and Ziegenspeck (1926) in which plants are classified and related in reference to their serum reactions, all plant life may be represented as branching from one main stem, which has its roots in autotrophic bacteria, and progresses upward through algae, fungi, mosses, ferns, gymnosperms, and angiosperms, till at its apex we find the Compositae. Among the lowest of the dicotyledons is the Ranunculaceae, shown as a short branch with no offshoots, and at the same height as the Rosaceae, which has many families related to it. The Ranunculaceae family, therefore, is primitive, but not so much so as the Menispermaceae, Ceratophyllaceae, Nymphaceae and Magnoliaceae, which all appear below it on the chart.

The family Ranunculaceae, to which the anemones belong, is considered by recent authors (e.g.Hutchinson, 1926[1]), Clements[2],), to contain the most primitive of the herbaceous

1. Families of Flowering Plants, (Hutchinson,(1926)
2. Flower Families and Ancestors, Clements, (1928.)

Dicotyledons. This opinion is based on several characteristics, among which are the following:-

1.- They are nearly all perennials with alternate leaves.

2.- The flowers are predominately hypogynous, actinomorphic and hemicyclic to rarely completely cyclic.

3.- All the parts of the flower are free, as a rule, the sepals and petals (if present) are often numerous, while the stamens and pistils are usually so.

4.- The seeds contain a copious endosperm surrounding a very small embryo.

The tribe Anemoneae (Gray, 1908), comprises the genera Ranunculus, Myosurus, Adonis, Thalictrum, Anemone, Trautvetteria, Anemonella and Hepatica, of which the first five occur in Manitoba.

The foregoing are similar in that they are all herbs; the sepals, which may number from 3 to 20, are imbricated in the bud; the stamens are numerous; the carpels are one-ovuled; the fruit is an akhene; the leaves may be basal or alternate, and are usually divided. Anemone resembles Hepatica in the fact that it has no petals, and possesses an involucre, remote from the flower in the former genus, but close to it and resembling a floral envelope in the latter. Ranunculus and Adonis have petals, but no involucre, while Thalictrum has neither. The ovule in Ranunculus is erect, but in all the other related genera it is suspended. The Anemones are, with the exception of A. patens, without nectaries, while Ranunculus and Myosurus have nectariferous pits at the base of the petals. The above-mentioned and other characteristics of these genera are set forth in the accompanying table.

TRIBE ANEMONEAE.

	Ranunculus	Bactrachium	Thalictrum	Adonis
Duration	Annual or perennial	perennial (aquatic)	herbaceous perennial	annual
Roots or Rootstocks	Fleshy fibrous	fibrous	short perenn nial rootstock	
Leaves	alternate, simple, entire, divided or dissected	alternate, dissected or palmately lobed	ternately decompound, basal and cauline, alternate petioles dilated at base.	alternate, pinnately dissected, segments linear.
Involucre	absent	absent	absent	absent
Inflorescence	solitary or corymbed yellow or white	solitary small white	racemed or panicled, dioecious, purplish or greenish	solitary, red or yellow.
Sepals	usually 5, imbricate in bud, spurless deciduous	usually 5, imbricate in bud, spurless	4 or 5 small imbricate in bud, spurless	5 - 8 imbricate in bud, spurless
Petals	often more than 5, with nectariferous pit	usually 5, with nectariferous pit	absent	5-16, with no nectariferous pit
Stamens	numerous, occasionally few all anther bearing	numerous occasionally few; all anther bearing	numerous exserted, filaments often dilated	numerous; all anther bearing
Pistils	several or many, one-ovuled	many in a globular head	4 - 15 few	numerous in a head
Styles	Subulate long, & filiform		Subulate	persistent
Stigmas			unilateral or sessile & elongate	
Achenes	capitate or spicate, generally flattened, smooth or echinate, ovule ascending or erect	oblique, compressed, not margined; transversely wrinkled, beakless, or short beaked; ovule ascending or erect	one seeded, ribbed or nerved, stipitate or sessile (inflated in some species; ovule suspended	1 seeded, capitate or spicate, rugose reticulated, tipped with the persistent styles ovule suspended

TRIBE ANEMONEAE

	Anemone	Pulsatilla	Hepatica	Myosurus
ration duration	herbaceous perennial	herbaceous perennial	perennial	annual
oots or ots or otstocks Rootstocks	horizontal rootstocks	tap root	fibrous	fibrous
aves leaves.	basal, lobed divided or dissected	basal, long petioled ternately divided central division stalked, lateral divisions 2-parted	basal, evergreen purplish red beneath 3 lobed	basal, linear tufted
volucre Involucre	remote, sessile or short petioled	remote sessile 3-leaved	close under flower, sessile 3-leaved	absent
flores- cence	solitary or cymose, white greenish, red or yellow	solitary purple or white	solitary white or purple	solitary greenish-yellow, small
pals Sepals.	4-20, petioled, imbricate in bud, spurless	5-7 imbricate in bud spurless	imbricate in bud spurless	5, imbricate in bud, spurred
als Petals	absent	absent	absent	absent or when present, with nectariferous pit
amens Stamens	numerous, all anther bearing	numerous outer ones sterile functioning as nectaries	numerous all anther-bearing	5 - 25 all anther-bearing
stils Pistils	usually numerous	numerous	several in a small head	numerous, borne at maturity on elongated receptacle
rles styles	short subulate	elongated densely plumose, persistent	short subulate	minute or elongated
igmas stigmas	introrse unilateral	introrse unilateral	introrse unilateral	

TRIBE ANEMONEAE (cont'd).

	Anemone	Pulsatilla	Hepatica	Myosurus
Achenes	compressed one-seeded, pointed or woolly, ovule suspended	with long, persistent styles, ovule suspended	short-beaked pubescent	somewhat 3-sided apiculate or aristate, in a long spike, ovule attached near top

KEY TO THE ANEMONES OF MANITOBA.

(Compiled partly from Gray and Britton and Brown, and partly from the author's observations.)

Anemone.

Erect perennial herbs. Radical leaves lobed, divided or dissected, those of the stem 2 or 3 together, opposite or whorled, sessile or petiolate, forming an involucre remote from the flower. Peduncles one-flowered, solitary or umbellate. Sepals 4-20 petaloid. Petals 0. Stamens ∞, shorter than the sepals. Carpels ∞. Achenes pointed or with long feathery tails, compressed, one-seeded, ovule anatropous, suspended.

I. Pulsatilla.

Achenes with long persistent plumose styles. Inner stamens anther-bearing, outer ones often small, abortive, and answering to petals.

Anemone patens.

II. Anemone proper.

Styles short, not plumose. Staminodia none. Sepals 5 - 8.

A. Achenia densely woolly, compressed. Involucre far below the flower. Stem commonly branching above. Tall, generally 2 - several flowered.

(1) leaves of involucre short-petioled. Sepals usually red. Head of fruit globose or oval.

A. multifida.

(2) Taller. Involucral leaves long-petioled. Sepals white or green, silky downy beneath. Head cylindrical, oval or oblong. Style subulate.

(a) Head of fruit oblong or oval. Divisions of the leaves ovate broad. Secondary involucre present on lateral peduncles.

A. virginiana.

(b) Head of fruit cylindric. Divisions of the leaves wedge-shaped, narrow. Secondary involucre usually wanting.

A. cylindrica.

B. Achenia pubescent or nearly glabrous.

(1) Stout, 1° - 2° high, branching and bearing several flowers. The lateral peduncles involucellate. Leaves of involucre sessile. Sepals 5, obovate, white. Head of fruit globose. Carpels nearly orbicular, naked, wing-margined.

A. canadensis.

(2) Stems slender, one flowered. Plant 4' - 9' high. Involucral leaf divisions lobed or incised. One radical leaf occurring later than the flower, white or tinged with purple outside. Achenes rather few, ovate, oblong.

A. quinquefolia.