Thematic block Systematics of flowering plants 1.

Lesson 6. Subclasses Ranuculidae

The purpose of the lesson: to learn how to make a morphological description of plants, to learn systematic features of representatives of the subclasses Ranuculidae.

Basic level questions

1. General characteristics of the Ranunculaceae family.
2. Main trends in the evolution of flowers and fruits in the Ranunculaceae family.
3. General characteristics of the family Papaveraceae.
4. General characteristic of the family Barberidaceae.

Instructions for the work

Material: set of herbarium and fixed plant material of the subclasses Ranunculidae.

Tables: Adonis vernalis, Buttercup causticum, Larkspur, Aconitum, Sleeping poppy, Chelidonium.

Equipment: stereoscopic microscope, magnifying glasses, dissecting needles, tweezers, slides, filter paper strips, distilled water.

Methodology for completing the work.

Task 1: Study the representatives of the Ranunculaceae family.

Using herbarium and fixed material, study the types of flowers of the Ranunculaceae. Pay special attention to the presence of nectaries and spurs. Identify from which parts of the perianth they are formed. Note which cases of sepals are brightly coloured. Specify the primitive and progressive features found in the flowers of Ranunculaceae (Buttercups) (using herbarium material as an example).

Study the types of fruits of the Ranunculaceae family plants. Mark the progressive and primitive characters.

Sketch in the workbook the different types of flowers and fruits found in the Buttercups (Fig. 1-2). Mark with arrows the direction of evolution of flowers and fruits in this family. Make formulas and diagrams for each type of flower found in the Ranunculaceae family.

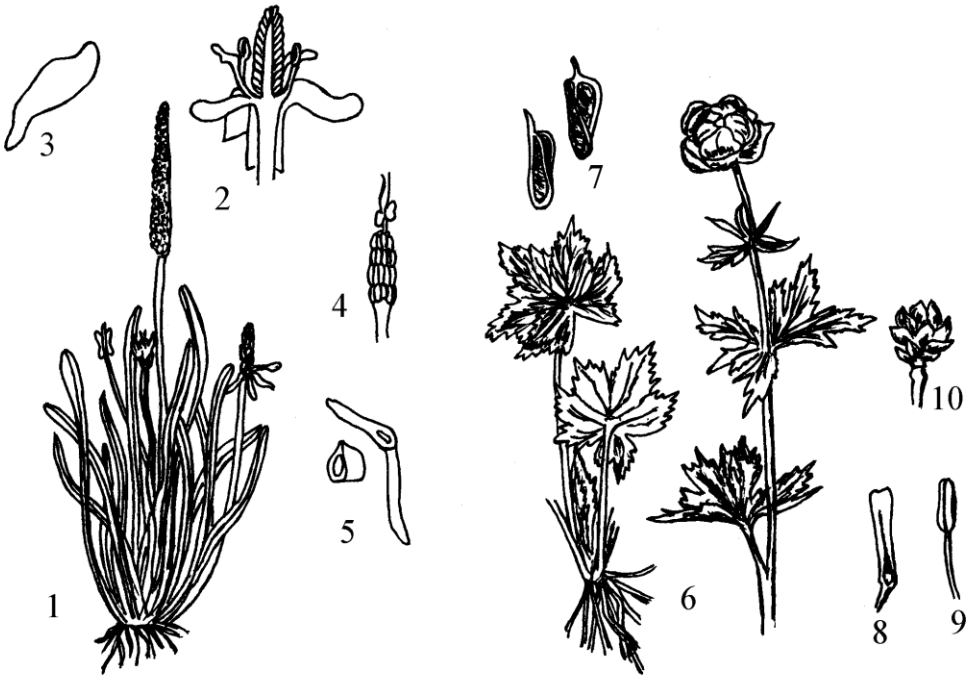

Fig. 1. Representatives of the Ranunculaceae family with acyclic flowers (orig.):1-5 Myosurus minor. 1 – a general view of the plant, 2 - a flower in section, 3 - a sepal, 4 - a guinea, 5 - petals modified into nectaries. 6 - 10 - European Trollius. 6 - general appearance of the plant, 7 - follicle, 8 - nectaries, 9 - stamens, 10 - fruit - etaerio follicles.

Fig. 2. Representatives of the Ranunculaceae family with hemicyclic flowers (Orig.): 1-3 Adonis. 1 - general view of the plant, 2 - androce and guinea, 3 - flower diagram, 4-7 Ranunculus Acris 4 - general view of the plant, 5 - petals with nectaries, 6 - fruit etaerio achenes -, 7 - flower diagram.

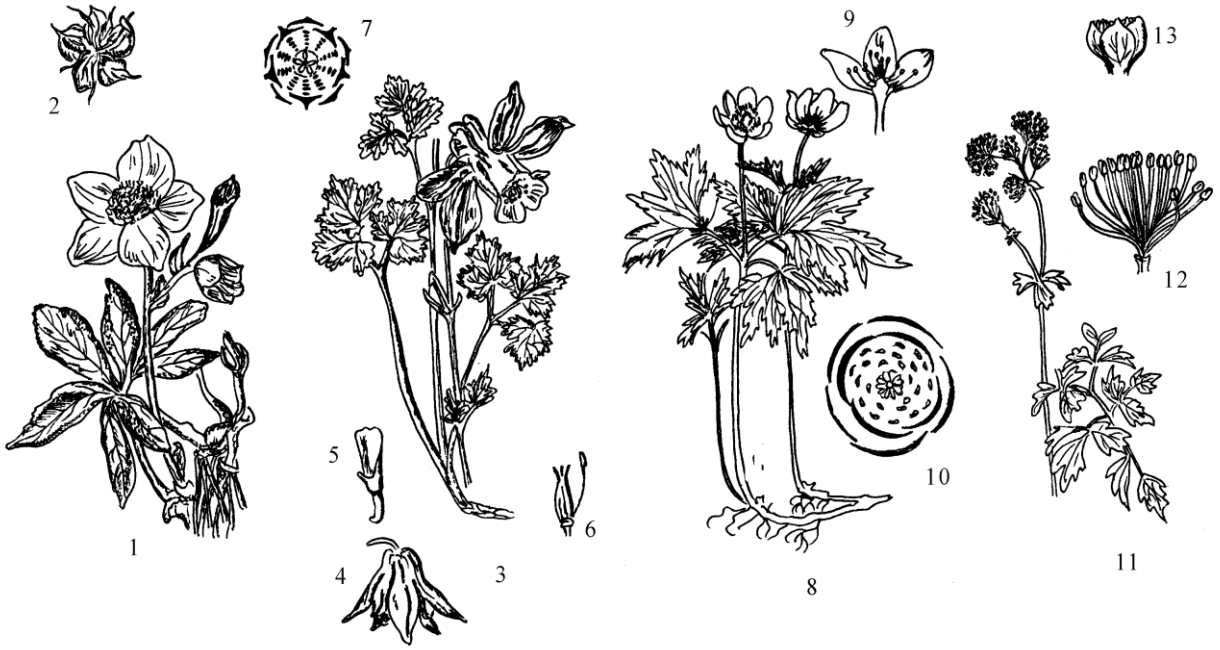

Fig. 3. Representatives of the Ranunculaceae family with cyclic flowers (Orig.): 1-2 Caucasian hellebore. 1 - general appearance, 2 - corolla petals, modified into nectaries. 3 - 7 Hybrid catchment. 3 - general appearance, 4 - calyx, 5 - petal, modified into a nectary, 6 - guinea, 7 - flower diagram. 8-10 Buttercup anemone, 8 - general view, 9 - flower in section, 10 - flower diagram. 11 - 13 Thalictrum minus. 11 - general view, 12 - androceus, 13 - perianth.

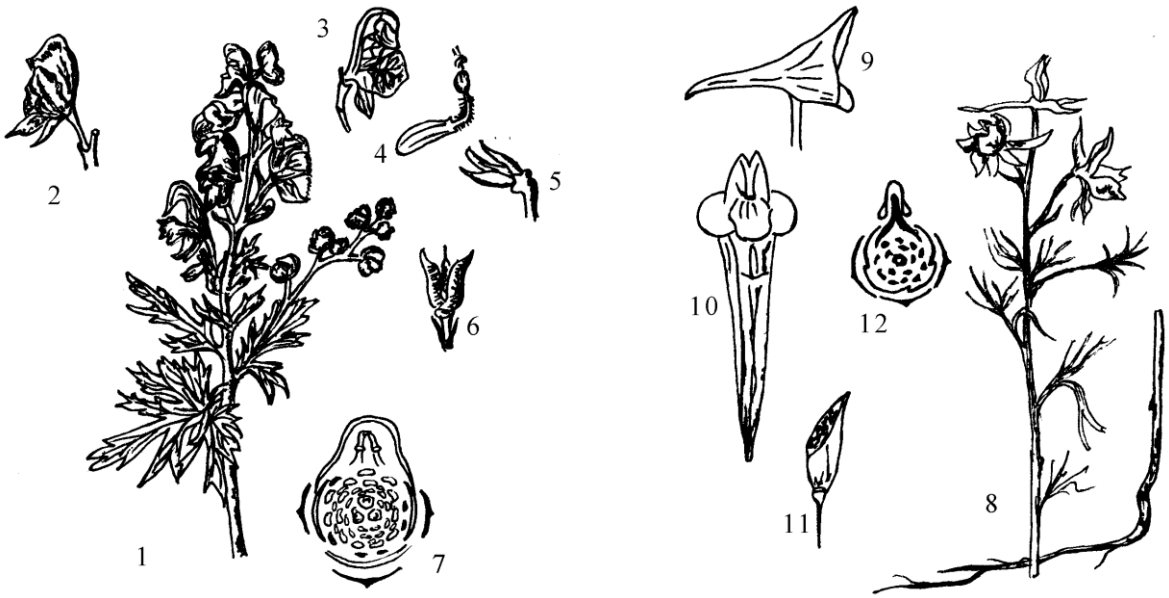

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Fig. 4. Representatives of the Buttercup family with zygomorphic flowers (Orig.): 1-7 Aconit blue 1 - general view, 2 - flower, 3 – flower in section, 4 - nectary, 5 - guinea, 6 - etaerio follicles fruit, 7 - flower diagram, 8 - 11 Field larkspur. 8 - general view, 9 - calyx spur, 10 - corolla, 11 - follicle, 12 - flower diagram**.**

Task 2. Study of representatives of the Papaveraceae family.

Using herbarium material, study plants of the Papveraceae family. To note the main similarities and differences with representatives of the Ranunculaceae family. Pay special attention to the structure of the calyx.

To study the types of fruits of plants of the Papveraceae family. Note progressive and primitive signs.

Draw flowers and fruits of the studied plants in the work album (Fig. 5)

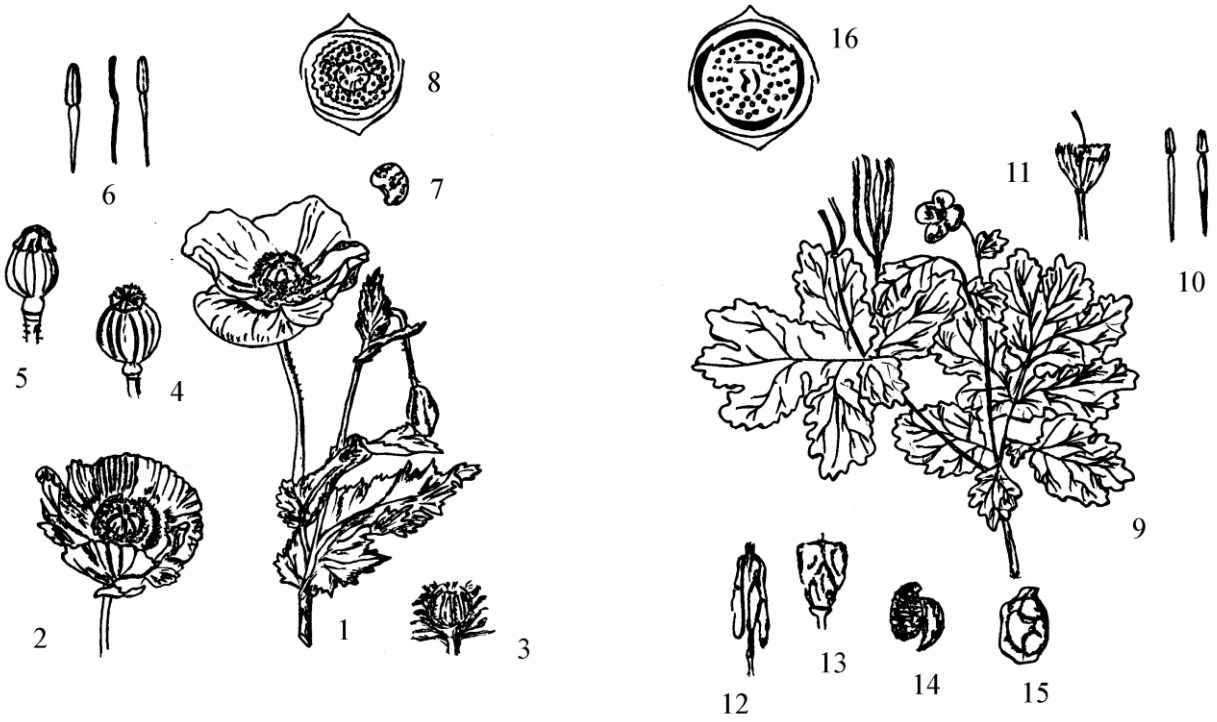

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Fig. 5. Representatives of the Papaveraceae family.

1-8 Poppy sleeping pills. 1 - general appearance, 2 - flower, 3 - guinea and androce, 4-5 - fruit capsule, 6 - stamens, 7 - seed, 8 - flower diagram. 9 - 16 - Chelidonium. 9 - general appearance, 10 - 11 androcea, 12 - fruit capsule, 13 - opening bud with falling sepals, 14 - 15 seed, 16 - flower diagram.

Task 3 (educational research work of students). Study of representatives of the Berberidaceae family.

Independently consider the herbarium of representatives of the Berberidacea family. Note their differences from the representatives of the Ranunculaceae family.

Task 4 (educational research work of students). Study of representatives of the Fumariaceae family.

Independently consider the herbarium of representatives of the Fumariaceae family , the order Papaverales. Pay attention to the features of the structure of the flower (spinolepestny, zygomorphic corolla). The most common representative in the Volgograd region is the dense Crested (Corydalis solida). This plant is an ephemeroid. The fruit is a pod-shaped capsule. The seeds have a seedling and are spread by ants.

Task 5 (educational research work of students). Study of representatives of the Peony family.

Independently consider the herbarium of representatives of the order Peony (Paeoniales). In the Volgograd region, only 1 species of this order is found in the wild: a thin-leaved peony. It is listed in the Red Book of the RSFSR.

Task 6 (educational research work of students). Comparison of morphological features of representatives of various families of the Ranunculid subclass.

Make a morphological description of the studied plants, formulas and diagrams of their

flowers. The results should be presented in the form of a table.

Morphological description of plants.

Name of the plant						
Leaves, simple or complex, the shape of the leaf blade, the presence of petioles and stipules, pubescence, the shape of the leaf margine, the presence of modifications.						
Stem, branching, orientation in space, the presence of modifications, pubescence						
Root system, the presence of root modifications						
The presence of special organs of vegetative reproduction (whiskers, nodules, bulbs), their origin						
Flower Formula						
Flower Diagram						
Features of the structure of the flower (the presence of spurs, nectaries, colored calyx, etc.)						
Fruit, adaptations to seed distribution						