

care necessary being to keep them well supplied with fresh water, removing and adding a little every day.

Large tadpoles, which have not quite reached the stage represented by figure 7, may be found in ponds in the fall, and are easily kept in glass jars during the winter. Till toward late spring they require very little food besides what they

Study the form of the mature frog, and compare it with the forms through which it has passed in its early stages. These forms, together with the egg, complete the cycle of its life history.

Note the picture of the skeleton of a frog, and compare it with the skeletons of other animals. Notice the close similarity between it and the skeleton of man, especially in the bones of the arms and legs. This supplies a good exercise in working out homologous parts. The radius and ulna are separate in man, but in the frog these are almost completely grown together; the same is true of the tibia and fibula. The frog also shows a peculiarity in the tarsal bones, see 13. 16 is a rudimentary toe. The pelvic girdle is pictured in 10, and the prolongation of the vertebral column, in 3, is known as the urostyle. The bones of the head are not so readily compared with those of the human skull. The position of the eyes is well marked, and between and extending back from them is the small brain case. 4 marks the scapula. Note the small number of vertebrae in the back bone,—nine,—eight have well marked lateral processes. Note the absence of ribs.

THE ANTIOPA BUTTERFLY.

Plate III illustrates the metamorphosis of our earliest butterfly, the mourning cloak or antiopa butterfly (*Euvanessa antiopa*). It is a widely distributed insect, occurring throughout North America as far south as Mexico and Florida, and is found over northern Europe and in Asia.

The upper picture represents the larvae or caterpillars, a little less than half their natural size, feeding on a twig of elm. They are often called the spring elm caterpillars. Look for them in a few weeks on elm, and willow trees, you will see at once why they are spoken of as "spring."

The middle picture shows the pupa or resting stage, chrysalis. Note the empty chrysalis to the right, and the adult, winged form, imago, clinging to the twig. The lower picture is a dorsal view of the imago with wings expanded, slightly reduced.

They live about four weeks in the caterpillar stage, molting once each week, and feeding with increased voracity with every molt; they then pass into the pupa or resting stage, and

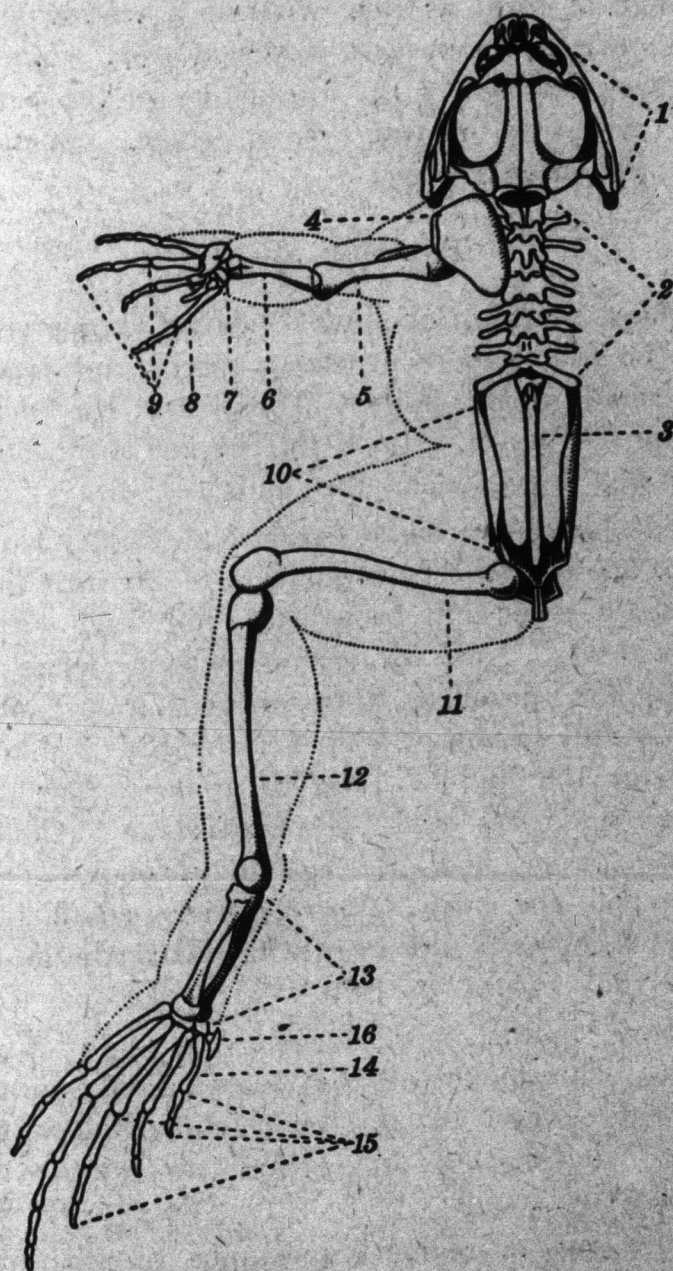


PLATE II.

SKELETON OF FROG, NATURAL SIZE.

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can nibble from a water-plant, which should always be in the jar. In spring and early summer they pass through the stages pictured is figures 7, 8, 9, 10, and 11, and finally reach the mature form seen in figure 12. Specimens representing these forms may be gathered in shallow parts and sloughs where the water is warm. If fed fish-food during the winter they develop earlier.