

length of tergum 7; a prominent, continuous, dark brown, median line on terga 7-10, interrupted posteriorly on each tergum; anterior margins of terga 7-9 with a pair of dark-brown, transverse lines; mid-dorsum elevations of terga 7-9 pale, keel-shaped, approximately equal to 1/2 the length of the respective terga; lateral borders of terga 6-9 crenulated; crenulation weakest at tergum 6; posterolateral corners of terga 6-9 produced into spines as in Figure 14 D; abdomen of males more flattened than those of the females. Sterna light brown with numerous black tubercles; lateral margins of sterna 1-5 dark brown; a small network of black stipplings near anterior and posterior margins of sterna 1-8; prominent black macula near anterolateral corners of sterna 6-9; posterior border of sterna 6-9 weakly crenulated; subanal plate deeply cleft apically. Caudal filaments (Fig. 14 D): cerci light brown, darker at base; basal 2/3 of median filament reddish-brown; remainder of filament brown; posterior 2/3 of caudal filaments with long brownish hair.

The twelfth instar molted after 17-21 days, averaging 17.6 days.

GROWTH AND DEVELOPMENT

We reared the first three nymphal instars of *Baetisca rogersi* from eggs hatched in the laboratory. Instars four through twelve came from young nymphs collected in the field and reared individually in the laboratory. The fourth instar identification was based on body length, head width, and degree of development of the thoracic notal shield.

Although admittedly little research has been completed on other species, this represents the lowest total number of instars reported in the Ephemeroptera. Ide (1935b) estimated a total of 30-45 instars for *Stenonema canadense* (Walker) and about 30 instars for *Ephemera simulans* Walker. Murphy (1922), rearing small groups from eggs, found 27 stadia (apparently all nymphal instars) in *Baetis posticus* (Say). Rawlinson (1939) reared and classified 17 developmental stages in *Ecdyonurus venosus* (Fabricius). These morphological stages did not correspond to instars in this species but occurred independently at different instars. However, from information on the Palmen organ of two young (6 mm) nymphs, Rawlinson stated that the minimum possible number of molts was 16. Degrange (1959) reared 43 nymphs of *Cloeon simile* Eaton from egg to imago; the number of molts (including the subimaginal molt) varied from 21-30. Degrange was also able to correlate successfully the number of layers in the Palmen organ with the number of molts. Finally, applying Dyar's rule to a laboratory population, Froehlich (1969) calculated a total of 15-16 nymphal instars for *Caenis cuniana* Froehlich.

The data indicate a total of 12 nymphal instars in *B. rogersi*. No alternate method of estimating the number was made. Dyar's rule is a geometric growth ratio; its calculation requires a large population reared under constant conditions. Lacking necessary technical equipment, we made no attempt to dissect the Palmen organ. An undiscovered instar might conceivably exist between the third and fourth instars. Also