ceivable purpose is that of determining the motion of the contained fluid in one constant course; a purpose necessarily incompatible with its supposed alternate undulation in opposite directions, from one end of the tube to the other. These valves are exhibited in Fig. 336, in a still more magnified view of a longitudinal section of the dorsal vessel, showing the semicircular folds (s, s) of its inner membrane, which perform the function of valves by closing the passage against any retrograde motion of the fluid. This discovery of valves in the dorsal vessel, again made the balance of probability incline towards the opinion that it is the agent of some kind of circulation.

All doubt as to the reality of a circulation in insects is now dispelled by the brilliant discoveries of Professor Carus, who, in the year 1824, first observed this phenomenon in the larva of the *Agrion puella*. In the transparent parts of this insect, as well as of many others, numerous streams of fluid, rendered manifest by the motions of the globules they contain, are seen meandering in the spaces which intervene between the layers of the integument, but without appearing to be confined within any regular vessels. The streams on the sides of the body all pass in a direction backwards from the head, till they reach the neighbourhood of the posterior end of the dorsal vessel, towards which they all converge; they are then seen to enter that vessel, and to be propelled by its pulsations towards its anterior extremity, where they again issue from it, and are subsequently divided into the scattered streams, which descend along the sides of the body, and which, after having thus completed their circuit, return into the pulsating dorsal vessel.

This mixed kind of circulation, partly diffused and partly vascular, is beautifully seen in the larva of the *Ephemera marginata*,* where besides the main current, which, after

* This insect is figured and described in Dr. Goring and Mr. Pritchard's "Microscopic Illustrations," and its circulation is very fully detailed, and illustrated by an engraving on a large scale, by Mr Bowerbank, in the Entomological Magazine, i. 239; plate ii.