and Luchsinger in the veins of the bat's wing, there is automatic contraction of muscular tissue in the entire absence of nervous elements.

Ransom has been unable to find in the heart of the snail (Helix) any ganglion cells. This investigator's work on the heart of the Poulp (*Octopus*) has, it seems to me, thrown great light on the whole subject of cardiac physiology. A brief notice of it in this place may be instructive.

The heart in this creature belonging to the most highly developed class of mollusks, the Cephalopods, consists of: (1) a prebranchial or venous portion, and (2) a post-branchial or arterial portion. The former includes the vena cava, kidney veins, and branchial heart; the latter the auricles and ventricle.

The pre-branchial system collects blood from the veins and drives it through the gills. Two large nerves known as the visceral, and representing the vagi, are given off to the heart. On the auricles, the branchial heart and the gills there is a ganglion connected with the main nerves. The muscular tissue of the ventricle is finely striated; of the auricles, smooth. After the most careful microscopic examination, Ransom asserts the entire *absence* of nerve cells in the substance of the heart of this mollusk. He considers that the ganglia lying on the heart have nothing to do with originating nervous impulses that might serve to cause cardiac pulsation. He believes that they have a co-ordinating influence over the various parts of the cardiac system, and probably act reflexly; after their excision, the heart still beats, but not in normal fashion.

The contractile kidney veins are composed of smooth muscle cells, devoid of ganglia anywhere in their substance.

Long since Bernstein, and more especially Bowditch, showed that the lower two-thirds of the frog's ventricle do not possess the power to contract *automatically*. It has, however, been shown that if this portion of the ventricle be tied upon a perfusion cannula, and some fluid, if only weak saline solution, be passed through it, this quiescent apex will commence to beat when the pressure within it has reached a certain point.

Ransom points out that in the Poulp the heart, and especially the regulative part of the cardiac muscular machinery, the