

rhythm appears in the heart, then a median tube, without muscular striation, at the 23rd day; but in no case is there any difference of the dorsal nerve cord until the 29th to 33rd day.

His explanation, which does not seem convincing, is that there is a transference of automatism and conductivity from myocardium to nervous tissue at some stage in embryonic development. But this embryological evidence in favour of the myogenic theory does not cause him to recede from his position that in *limulus* at any rate, the heart rhythm is primarily nervous in origin.

Two papers by G. N. Stewart upon certain phases of the bulbar centres are worthy of note.

One paper in *Am. J. Phy.* Aug. 1, 1907, by Stewart and Pike, approaches the essential character of the bulbar centres by the method of vascular occlusion and subsequent release; their idea being that by this method complete isolation of the centres from external influences may be secured.

In general, the technique was as follows:—After isolating the brachial plexus and the vagus trunks, these were stimulated and the results recorded by blood pressure and respiratory tracings. The cerebral arteries were then temporarily ligated and the afferent nerves again stimulated. Following release of the ligature stimulation was again done.

The Respiratory Centre. They found that after occlusion of the arteries to the brain the respiratory movements ceased in from $\frac{1}{2}$ to 3 minutes; following this quiescent period came a few irregular gasps and then absolute apnoea until resuscitation.

After release of the head arteries, respiratory movements began on an average in about 6 minutes, but some time still elapsed before the centre became amenable to afferent impulses.

They noted in a large number of animals a very constant rate of respiration—about 4 per minute in the first moments of resuscitation. At this time the centre was discharging rhythmically and effectively, but stimulation of brachial or vagus had not the slightest effect on respiration, nor did the section of the vagus nor the brain-stem alter the rhythm.

Asphyxia, however, produced the usual increase in respiratory movements.

These facts the authors regard as a new proof of the automatism of respiratory centre.

During the inactivity of the bulbar centre, respiratory movements involving the lower ribs and abdominal muscles at a rate of 9 per minute were noted.

The Vaso-motor Centre. Here occlusion first causes a rapid rise