when the head is excessively elongated; and when the limbs are reduced to fins, as in Fishes, the neck is essentially wanting. Again, the longer cervical vertebræ are those most remote from the body, and the stoutest those nearest it; and, in the Camelopard, an animal in which the part of the limbs remote from the body is very much elongated, these cervical vertebræ remote from the body are likewise much elongated. It would hence appear that the amplification in the neck in these species is subordinate mainly to the thoracic or secondary centre.

But although this argument in favor of a connection at times between amplification in the neck and limbs may appear direct, we deem it only a doubtful suggestion. In any case, the fact of two systemic centres in Mammals seems to be established—one, the *cephalic* or *superior*, quite small in radius and with narrow limits of amplification; the other, the *thoracic* or *inferior*, very large in radius, and admitting of a wide range of amplification.

In Crustaceans the head and thorax make one single division of the body, the cephalothorax; and the cephalic nervous mass is often quite near the first thoracic, the two in some inferior species being on opposite sides of the esophagus. The cephalothorax here corresponds, therefore, to one single primary centre; and this centre is situated near the anterior margin of the mouth-aperture, or between the mandibular and 2nd-antennary segments, where it is placed by the writer in his former articles on this subject. There is an inferior or *secondary* centre in Crustaceans, but this is abdominal, as remarked in Art. I, p. 322. In Insects, as the body consists of three parts, a head, thorax and abdomen, there appear to be, besides the cephalic, two secondary centres, a thoracic and an abdominal; and in the Mantids and like species we have an example of a large anterior amplification of the thoracic. At page 328 of Art. I, a fact is mentioned bearing on the existence of two centres in Worms.

While amplification, then, depends on the degree of systemic control over vegetative growth and development, it may take place about the structure as a systemic unit, or about its primary and secondary systemic centres; and each centre may be more or less independent of the others in the amplification subordinate to it.

When, in an organism, the systemic force controls in the highest possible degree, under the type, the tendency to vegetative increase, or the mere powers of growth (the centrifugal tendency), there is the highest concentration and greatest circumferential contraction; and when in any less degree, there is amplification or circumferential extension.

When the systemic control is still so great as to keep the parts essentially within typical proportions as to relative lengths of parts, the amplification, if any, is simply gross-amplification—gross-amplification of the whole bony structure in superior spe-