nerves. For the motor nerves, supplying the muscles of the segment to which they run, unite to form an anterior or ventral root as they emerge from the spinal cord, and the sensory nerves, running to supply the skin of the same segment, unite in a similar manner to form a sensory or dorsal root; the ventral and dorsal roots uniting in higher forms, to form the complete spinal nerve, although in Accipenser and Petromyzon and others, they still retain their primitive nature and remain throughout life as distinct and separate nerve trunks.

So with Balfour the index of cephalic segmentation is to be found in the cavities which exist in the middle of these primitive segments or myotomes, which as I have already said, are simple prolongations from the original body cavity. So by counting up the cavities of the head or head cavities, he hoped to be able to arrive at the correct number of segments which had primitively entered into its composition. As Balfour's untimely death occurred in 1882, so putting an end to the full elaboration of his work, and as his pupil, Milnes Marshall, took up and further worked out his ideas, I shall simply state Marshall's results, saying that Balfour recognized at least 8 segments in the head, Marshall starts out by formulating the characteristics which a segmental nerve should have in order to be of any value as an index to the number of head segments. These are: 1st. It should develop as an outgrowth of the neural crest.

2nd. Its point of attachment should change with the progress of development, from the neural crest to the ventral side of the brain.

3rd. The general course of the nerve should be at right angles to the axis of the brain; a segmental nerve should not transversely cross several segments.

4th. The nerve should show a relation to a visceral arch, and also to a head cavity.

5th. A segmental nerve very constantly presents a ganglionic enlargement near its origin from the brain.

He then proceeds to apply these five tests to each of the cranial nerves in turn, starting first with the olfactory.

Now up to Marshall's time the olfactory nerve had been regarded as a prolongation of the brain and for this reason Stannius, and Gegenbaur had left it out of account in their dealings with the subject, but Marshall very correctly points out that in its development it really arises like all the other nerves of the head. Arising from the neural crest, its origin becomes shifted down to the ventral side of the brain, and in its primitive condition it really runs at right angles in the segment to which it belongs; it being only by the unequal growth of certain parts of the head that it comes finally to run, as in the case of amphibians in the long axis of the brain. It splits up to embrace the