important ones,[1] and of a large proportion of the known species. I state all these details merely to show that any speculations which follow, whether they be correct or not, are at least not unfounded, but are based upon an extensive series of observations.[2]

In regard to the relations of the Tunicata as a whole, I still incline to the view which was stated first by Balfour in 1881,[3] and to which I have adhered in several papers[4] published since, viz., that the Tunicata are to be regarded as a degenerate offshoot from the Protochordata, an early group of common ancestors of the Tunicata, *Amphioxus* and the Vertebrata. This position was adopted by E. van Beneden and Julin in their Recherches sur la Morphologie des Tuniciers,[5] and supported by a strong body of embryological evidence which goes to demonstrate (1) the fundamental agreement between the development of the larval Ascidian, which may be taken as the nearest form we know to the ancestral Tunicate, and *Amphioxus*, which is the nearest representative we have of the ancestral Chordata; and (2) the independence or considerable difference of some organs or systems in the body of the Ascidian from the corresponding parts in the Vertebrata.

This view of the origin of the Tunicata is controverted by Dohrn,[6] who regards the group as having degenerated, not from the Protochordata, but from the early Vertebrata, such as the lower fishes. This matter is still decidedly open to and is now under discussion;[7] but as the Challenger anatomical observations do not furnish any fresh evidence for either side, it is unnecessary to discuss it further here.

In the phylogenetic diagram (p. 120) the Prototunicata are shown as arising as an offshoot from the Protochordata not far from the point where the ancestors of *Amphioxus* left the main line. If, on the other hand, the vertebrate affinities of the group were adopted, the point of origin would have to be placed farther up the Chordate branch, and our conception of the early Prototunicata would be somewhat modified; but the remainder of this phylogenetic scheme from the later Prototunicata, now represented by the tailed larval Ascidian, onwards would remain unaffected by the change.

From a phylogenetic point of view the Tunicata are especially interesting—(1) on

[1] The only genera I have not had an opportunity of examining for myself are a few unimportant recently formed ones, such as *Styelopsis* and *Paramolgula*, which are closely related to older well-known genera, and present no points of fundamental importance.

[2] It would take up too much space to mention all the details of structure and development upon which the conclusions given in the following pages depend. The more important points are, however, discussed, and reference is made in the footnotes to the original works in which the structure of the various forms is described.

[3] Comparative Embryology, vol. ii. p. 271.

[4] A Phylogenetic Classification of Animals, p. 58, London; Macmillan, 1885; this Report, Part II., p. 387, 1886; On the Phylogeny of the Tunicata, *Proc. Roy. Soc. Edin.*, vol. xiii. p. 444, 1886; and Ency. Brit., 9th ed., article "Tunicata."

[5] *Archives de Biologie*, tom. vi. p. 459, 1887.

[6] Studien zur Urgeschichte d. Wirbelthierkörpers, *Mitth. d. zool. Stat. Neapel*, vol. vi. 1885.

[7] See Dohrn's Studien, etc., *Mitth. d. zool. Stat. Neapel*, vol. vii. 1887; and *Zoologischer Anzeiger*, Jahrg. x. pp. 407 and 433, 1887.