

discoveries made by Savigny and Cuvier, instituted the class Tunicata, which he placed between the Radiata and the Vermes in his system of classification.

In 1826 H. Milne-Edwards, while investigating along with Audouin the zoology of the Chausey Archipelago, off the coast of Normandy, made a number of observations upon Compound Ascidiæ in a living condition, and laid the foundations for his great work upon the group which was published some sixteen years later. He also at the same time was fortunate enough to discover the tailed larva,<sup>1</sup> and he traced its development into the adult Ascidian. Lister's observations, published in 1834, were made partly upon a species of the remarkable genus *Diplosoma*.<sup>2</sup> They referred mainly to the circulation of the blood. About this time Forbes and Goodsir, W. Thompson, Delle Chiaje, and others were steadily adding to the knowledge of the Compound Ascidiæ, and in 1842 Milne-Edwards' important memoir, "Observations sur les Ascidiæ Composées des côtes de la Manche," appeared, with its fresh anatomical and embryological discoveries, and its natural system of classification into (1) Botrylliens, (2) Didemniens, and (3) Polycliniens. Milne-Edwards had a great advantage over Savigny and others of his predecessors in having worked upon living material: some of the Compound Ascidiæ are greatly altered by preservation in alcohol.

Additions to the list of known species were made during the next few years by Forbes, Alder, and several others, and the article Tunicata in Todd's Cyclopædia, published in 1848, gives a good account of the knowledge of the Compound Ascidiæ at that time. A still more complete account was published some years later (1862) in Bronn's Thierreich. Dr. J. Denis Macdonald's observations upon some of the most remarkable forms of the Ascidiæ Compositæ were made about this time, viz., on *Chondrostachys* in 1858 and on *Diplosoma* in 1859. These excellent researches will be referred to later on in this work.

In 1862 Gegenbaur gave in Müller's Archiv an important account of the anatomy and development of *Didemnum gelatinosum*, and, a few years later, Kowalevsky's great memoir on the development of a Simple Ascidian made its appearance and threw a flood of light upon the interesting and peculiar tailed larva which had been described but not thoroughly investigated nor understood by Milne-Edwards and others. The relationship with the Vertebrata, which Kowalevsky established for the Simple Ascidiæ, held good of course for all groups of the Tunicata, and the similarity of the main points in structure and development between the larva of the Compound and of the Simple Ascidiæ has since been demonstrated by many observers.

The important observations of Krohn and Metschnikoff upon the process of gemmation in the Botryllidæ were published a few years later, and Kowalevsky's contributions to

<sup>1</sup> This, however, had been figured long before by Savigny both for Simple and Compound Ascidiæ (see Mémoires, pl. xi. fig. 2<sup>3</sup>, *Clavelina borealis*; and pl. xxi. fig. 1, t, *Botryllus polycyclus*).

<sup>2</sup> Usually referred to as a *Leptoclinum*.