Diplosoma macdonaldi, n. sp. (Pl. XLII. figs. 1–4).

The Colony is a thin spreading layer of irregular shape, slightly attached by parts of its lower surface. The upper surface is uneven but smooth. The colour is grey.

The length is about 2·5 cm., and the greatest breadth is 1 cm.; the thickness is about 1 mm.

The Ascidiozooids are moderately large and numerous. They are scattered irregularly over the surface of the colony, and are not arranged in definite systems. No common cloacal apertures are visible. The bodies of the Ascidiozooids are about 1·5 mm. in antero-posterior length and 0·5 mm. in greatest breadth; they are divided into two regions, thorax and abdomen.

The Test is very soft and flexible. It is of a clear grey colour and quite transparent. The matrix is slightly fibrillated in places, and contains large numbers of bladder cells and test cells of various kinds. No calcareous spicules are present. Many of the test cells are of large size (0·075 mm. in diameter) and of rounded form. They are coarsely granular.

The Mantle is rather thin and membranous. Its musculature is feeble.

The Branchial Sac is large. There are four rows of long stigmata. The transverse vessels are narrow, but they are provided with muscle fibres.

The Dorsal Lamina is represented by a series of long languets.

The Tentacles are of two sizes, placed alternately. They are about twelve in number.

The Alimentary Canal forms a wide loop. The stomach is large and smooth-walled.

Locality.—Off Bahia, Brazil, shallow water.

The small specimen for which this species is formed was found attached to a fragment of a Hydroid Zoophyte dredged in shallow water off Bahia. It is loosely attached to the branches of the Zoophyte around which it has grown (Pl. XLII. fig. 1). Its general colour is due to the Ascidiozooids, which are of an opaque grey and show distinctly, while the investing test is clear and almost colourless. The colony is exceedingly soft and flexible, and the outer layer of test may be readily stripped off, taking the Ascidiozooids with it, as in the case of the last species. Figure 2 on Plate XLII. represents such a preparation seen from the inner surface.

The Ascidiozooids lie at various angles to the surface, and are apparently quite irregularly placed. Their atrial apertures are connected by a system of canals and cavities which penetrate the test and greatly reduce its bulk and strength. These doubtless open at one or more points on the upper surface of the colony, but no such common cloacal apertures were discovered. The upper layer of test to which the Ascidiozooids adhere is fairly compact (Pl. XLII. fig. 2), but the lower parts are greatly vacuolated and contain