

change took place, however, a branch diverged from the main stem, and after considerable modification gave rise to the family of the Botryllidæ. In this long line of descent (N. in table, p. 150) the lost property of reproducing by gemmation was apparently regained, and as a result colonies were produced once more.

The Ascidiozooids in the ancestral Botryllidæ became completely embedded in a common test, but they remained in a short-bodied condition, the alimentary canal being placed alongside the thorax. The Ascidiozooids also, as the result of gemmation, became arranged in systems, and in each system all the atrial apertures have come to open into a centrally-placed common cloacal cavity (Fig. 26). The test

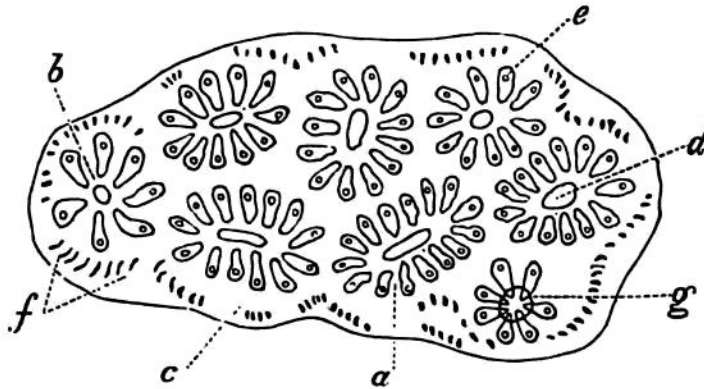


FIG. 26.—A colony of *Botryllus*. The Ascidiozooids are arranged in eight systems.

a. a large system formed of fifteen Ascidiozooids; b. a small system formed of seven Ascidiozooids; c. test; d. cloacal aperture; e. an Ascidiozooid; f. terminal knobs of vessels; g. a fully expanded cloacal aperture.

is penetrated in all directions by a well-developed system of blood-vessels with enlarged terminal bulbs in the superficial layer of the colony, forming an accessory organ of respiration.¹ This system is evidently the same as that found in the test of some of the Ascidiidæ, and has doubtless been inherited by the Botryllidæ from their ancestors amongst the Ascidiæ Simplices. The branchial sac in the Botryllidæ is well developed, and agrees with that of the Simple Ascidiæ from the point F. (table, p. 150) onwards in having well-developed internal longitudinal bars. The reproductive organs, finally, in the Botryllidæ are found in a condition which suggests the close connection with the ancestral Cynthiidæ shown in the table.

One of the new Compound Ascidiæ discovered during the Challenger Expedition, *Symplegma viride*, from Bermuda, is a remarkable form which unites the external appearance and general arrangement of colony characteristic of the typical Distomidæ, with the structure of branchial sac and dorsal lamina found only in the Botryllidæ and the Simple Ascidiæ. In the second part of this Report (p. 144), while pointing out the resemblance of *Symplegma* to the Botryllidæ, I placed the genus provisionally in the Distomidæ; but I am now inclined to regard it as being probably the

¹ See *Proc. Lit. and Phil. Soc. Liverpool*, vol. xxxix. p. 99, 1885.