are respectively the male and female Medusæ; and buds of both sexes arise from one and the same Hydra, the so-called gonoblastidium.

In Physophoridæ also, the community begins with a single Hydra. Leuckart (Zoologische Untersuchungen, I. Pl. 2, *Fig.* 23), Kölliker (Schwimmpolypen von Messina, Pl. II. *Fig.* 11), Vogt (Siphonophores de la mer de Nice, Pl. VI. *Fig.* 24; Pl. X. *Figs.* 32 and 35; and Pl. XI.), Gegenbauer (Beiträge, etc., in Zeitsch. f. wiss. Zool. vol. 5, Pl. XVII. *Figs.* 7, 8, 9, and 11), and Huxley (Oceanic Hydrozoa, Pl. VI. *Fig.* 12, and Pl. VIII. *Fig.* 2), have described and figured many such young Physophoridæ, exhibiting the primary Hydræ of different genera more or less free from the secondary productions budding from their sides. In the youngest of them the Hydra character is quite plain, and their resemblance to the young Physalia most striking (*Fig.* 50). But their resemblance to the Hydroid of Nemopsis Gibbesii *McCrady* is still more important, since it shows, beyond the possibility of a doubt, the close affinity of the naked-eyed Medusæ and the Siphonophoræ. Thus far, all the Medusæ known as originating from Hydroids had been observed to bud from Hydroids attached by their basis; but, in a recent paper (Gymnophthalmata of Charleston harbor, published in the Proceedings of the Elliott Society of Nat. Hist. for 1858), Mr. McCrady has described a species of Nemopsis, which originates from a floating, locomotive Hydroid, so similar to a young Physophora with incipient buds of swimming-bells, that, had he not traced the connection of the free Medusa to its Hydroid, or had the Hydroid alone, with its young Medusæ buds, been observed, it would unquestionably have been considered as a distinct genus belonging to the Siphonophoræ. A more direct proof that the so-called swimming-bells (Nectocalyces) of the Physophoridæ are genuine Medusæ buds remaining connected with the elongated axis of the primary Hydra (the Coenosarc) from which they grow, cannot be desired. And the only marked generic difference between Nemopsis and Physophora consists in the presence of tentacles and sexual organs in the Medusæ of the former which become free, while those of the latter are sterile and remain attached. But such differences are not essential among animals in which polymorphism occurs so extensively as in the lower Acalephs.

*Fig.* 50.


YOUNG PHYSOPHORA, (*Copied from Gegenbauer.*)

*r* Buds of so-called swimming-bells. — *b b* So-called tentacles; lower *b* so-called Polyp. — *c c* Feelers with lasso cells. — *r* Air sac. — *r*, lower *b*, and *r*, the primary Hydra; *b* and *b* secondary Hydræ; *c* the Medusæ buds.

Very early the single Hydræ, from which arise the communities of Physophoridæ, bring forth two kinds of buds, — Medusæ buds on their abactinal pole, and Hydræ buds on their actinal pole. Thus the community at once becomes a Hydro-Medusarium, consisting of one kind of Medusæ which remain sterile and never free themselves, and of two kinds of Hydræ; namely, the primary Hydra,