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COACTION AMONG HYDROZOAN SPECIES IN  
THE COLONY FORMATION<sup>1)</sup>

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The writers have been interested in the interspecific relation among hydrozoan species since they had observed the distribution pattern of hydrozoa on seaweed (Katô et al., 1961). It was observed, for instance, influenced by the presence of *Obelia dichotoma*, that *Clytia volubilis* shifts its position from the normal location to the more distal or proximal position on the branch of the stem of *Sargassum fulvellum*.

As Hirai and Kakinuma (1957, 1958 and 1960) have studied the life history of various hydrozoan species and thus the rearing method using the Petri-dish had been established, the writers were fortunate in their ecological work of these animals. A piece of hydrozoan stolon or a small amount of tissue mass forced out of a stolon placed in a Petri-dish was renewed frequently and as food the larvae of the brine shrimp were supplied sufficiently.

If, for instance, a stolon species of *Bougainvillia* and that of *Clytia* coexist in a Petri-dish, each piece respectively regenerates the hydroid colony, but soon the former colony dominates over the latter which become inactive in the colony formation (Katô et al., 1962).

In the experiment using the tissue mass forced out of a stolon, the dominance and subordination relationship among some hydrozoan species in the colony formation was also recognized, though the mode of the regeneration is characteristic in each species; for instance, the subordinate species shows the evasion growth avoiding the dominant species or remains as an atrophied colony being surrounded by the dominant colony (Katô et al., 1963).

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Concerning the mechanism in these interspecific relations it was noticed that if the *Cladonema* colony is reared together with *Bougainvillia*, the former is inhibited in the growth of colony and decreases in the abundance of polyps, being caused directly or indirectly by the metabolite of the coexisting *Bougainvillia* colony (Chiba and Katô, 1966).

But it seems to be important that the said interspecific coaction in the colony formation is observed in spite of the frequent renewing of the sea-water and further the respective stolon piece set in a Petri-dish normally regenerates new stolon and develops into a luxuriant colony till these two contact with each other, followed by the declining of the colony growth of the subordinate species. It is supposed from the above that the direct contact of the stolons of the coexisting colonies seems also to act as an important role in the interspecific coaction besides the influence of the metabolite of the dominant species on the colony growth of the subordinate one (Katô et al., 1963).

Concerned with the above assumption, some interesting features were obtained from two experiments. In the first experiment, the interrelation between *Clytia volubilis* and *Bougainvillia* sp. or *Cladonema radiatum* was done in relation to the coactive phenomena which appear when the interspecific contact of the stolons among colonies coexisting in a Petri-dish. In other experiment the stolon pieces of these hydrozoan species were set in series or in rows in a Petri-dish so that they may contact with each other interspecifically. Thus the coaction between the two species, *Bougainvillia* and *Clytia*, was examined at the beginning of the regeneration. From these experiments, it was recognized distinctly that there is a dominance and subordination relation among hydrozoan species as was already observed in the previous papers, and furthermore it was supposed that these phenomena were caused not only by the metabolite of the dominant species but also by the direct contact among the stolons during the course of the colony formation (Katô et al., 1967).

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