TOPIC: CORALS AND CORAL REEFS-I

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A brief account of coral and coral reefs and there importance:-

Corals:-

Meaning of coral

Coral animals or corals are marine, mostly colonial, polypoid coelenterates, looking like miniature sea anemones and living in a secreted skeleton of their own. Their calcareous or horny skeleton is also commonly known as coral. Some corals grow into massive, solid structures; others form large, branched colonies. Most of the corals belong to the class Anthozoa and the few to class Hydrozoa of phylum coelenterate.

Structure of coral polyp

1. Soft structure

A typical coral polyp from a colony is a small organism about 10 mm long and 1 to 3 mm in diameter. A basal disc is absent because the basal region of polyp is surrounded by a calcareous exoskeleton. Oral disc bears numerous tentacles, in several rows around an elongated, oval or circular mouth. Pharynx or stomodaeum is short and without siphonoglyphs. Mesenteries are restricted to the upper part of coelenteron and mesenterial

filaments contain only one glandular lobe bearing nematocysts. Body wall is without cinclides and nematocyst bearing structures (acontia). Muscles are poorly developed while little is known about nervous system.Living polyps are found only on surface layers of coral masses. They feed at night both by raptorial and suspension feeding. When not feeding, they withdraw into cup-like cavities of skeleton.

2. Structure of coral skeleton

Skeleton of solitary coral is known as corallite. It is a calcareous exoskeleton secreted by epidermis. In a colonial coral, corallites of individual polyps fuse together to form a skeletal mass, called corallum. Each corallite is like a stony cup with a basal part or basal plate, and a cup wall or theca, enclosing the aboral portion of polyp. Cavity of cup contains a number of vertical radiating ridges called sclerosepta, proceeding from theca towards the centre of cup. Inner ends of sclerosepta are fused to form an irregular central skeletal mass or columella.

<u>Types of corals in different groups</u>

Hydrozoan corals

Order hydrocorallinaincludes few genera, like millepora, stylaster and distichopora, which are colonial and secrete massive branched calcareous exoskeletons.These are found in coral reefs with other corals. Skeleton is secreted by a modified epidermis, called calicoblastic layer.

Living within the skeleton occur two types of polyps, large feeding gastrozooids and defensive dactylozooids.

Octocorallian corals

(a)**Order** alcyonaceaincludes marine, colonial and soft corals. A well-known genus is alcyonium, popular as “dead man’s fingers”

because of its resemblance to a human hand. It has an endoskeleton of separate calcareous spicules embedded in a massive mesogloea or coenenchyme.

(b)**Order** stolonifera includes the organ pipe coral, tubipora musica, widely distributed on coral reefs in warm waters. Skeleton is made of mesogloeal calcareous spicules forming parallel and vertical tubes, each occupied by one polyp, and connected together by lateral platforms. Skeleton is dull red in colour due to presence of iron salts.

(c)**Order** coenothecalia includes a single genus heliopora, commonly known as blue coral.

Its massive calcareous, skeletonor corallium is secreted by polyps living in large, erect, cylindrical solenialtubes on the surface of skeleton.

Hexacorallian corals

Order madrepora includes stony corals, which are the principal builders of coral reefs. While some of them are solitary, most are colonial, assuming a great variety of forms.

Solitary corals

Fungia (Fig.13), flabellum, etc., are the solitary corals or cup corals. The corallite is disc-like or mushroom shaped in form and measures 5 mm to 25 cm across.

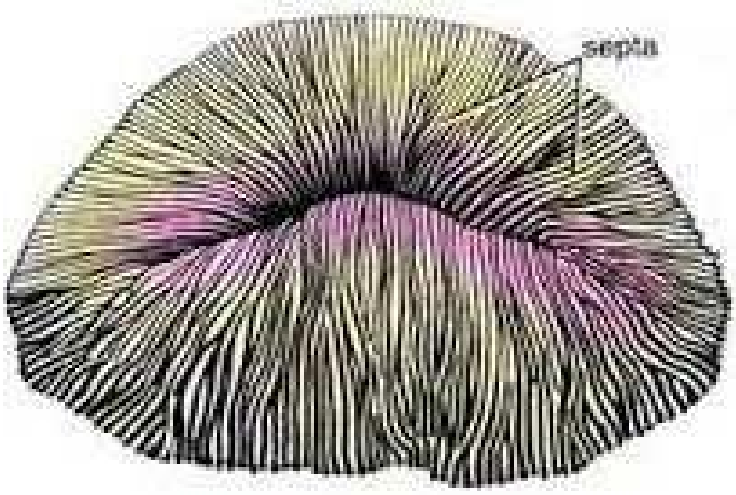

Fig Fungia

Colonial corals

Most of stony corals are colonial with plate –like, cup-like, spherical, or vase-shaped skeleton.

Typical examples of colonial medreporarian corals are acropora, oculina, favia, madrepora, etc.

Some of the colonies are branched.

Coral Reers

Coral colonies grow continuously in size by budding of polyps and often form extensive masses, known as coral reefs. According to T.Wayland Vaughan(1917), a coral reef is a ridge or mound of limestone, the upper surface of which is near the surface of sea and which is formed chiefly of $CaCO_3$ secreted by coral polyps. Principal builders of coral reefs are stony corals (madreporaria), but other important contributers are the hydrocorallines and alcyonarians. Coralline algae and foraminiferan protozoa also take part in the formation of coral reefs.Reef building corals require warm shallow waters (normally above 20C). They are therefore limited to the Indo-pacific, the central western pacific, and the carabbian regions north of Bermuda. About 50 species of corals contribute in the formation of reefs along the Florida Keys and in the West-Indies.

Kinds of coral reefs

The coral reefs are of three kinds, depending on how they are formed.

Fringing reefs

Coral reefs lying close to the shores of some volcanic islands or pert of some continent are termed fringing reefs. Fringing reefs may extend out to a distance of a quarter mile from the shore with the most active zone of the coral growth facing the sea. This seaward zone is commonly called the edge or front. A shallow water channel, 50 to 100 meters broad, lies between the reef-edge

and shore at low tide, water of channel recedes at quickly exposing a flat bottom surface, called reef flat. It is largely composed of coral sand, mud dead and living coral colonies and other animals (Fig.29).

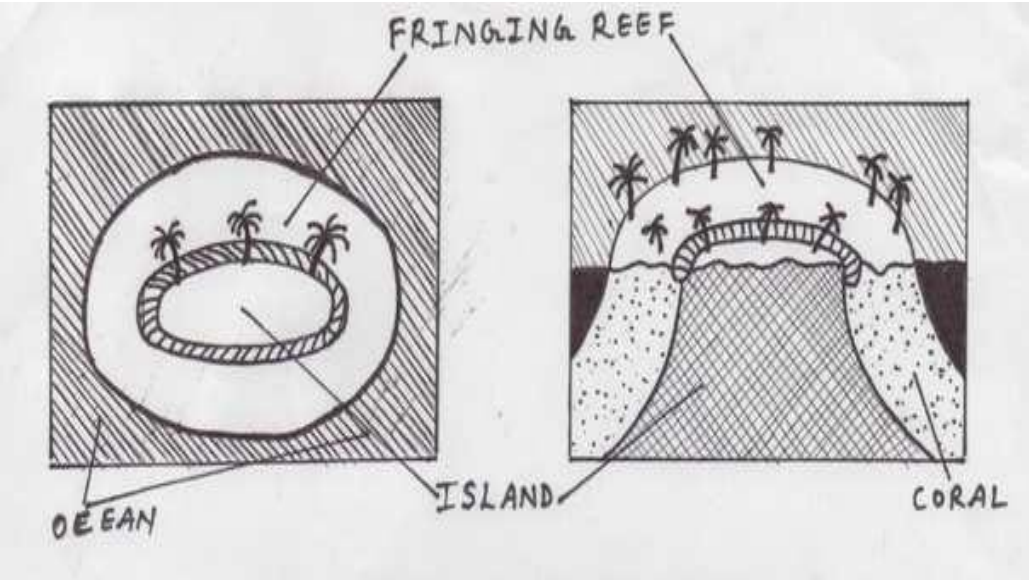

Fig. Fringing Reef