TOPIC: CORALS AND CORAL REEFS-II

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B.SC PART 1
ZOOLOGY(HONS.)-PAPER I-GROUP A
CHAPTER 5
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Barrier reefs

Barrier reefs are like fringing reefs but they are located some distance away from the shore.

The stretch of water, separating the barrier reef from land, may be half a mile to 10 miles or more in width. It is called a lagoon. It is 10 to 50 fathoms deep and suitable for navigation. Most notable example of barrier reefs is the Great Barrier Reef along the north-eastern coast of Australia. It is about 2000 km long and upto 150 km from shore (Fig.30).

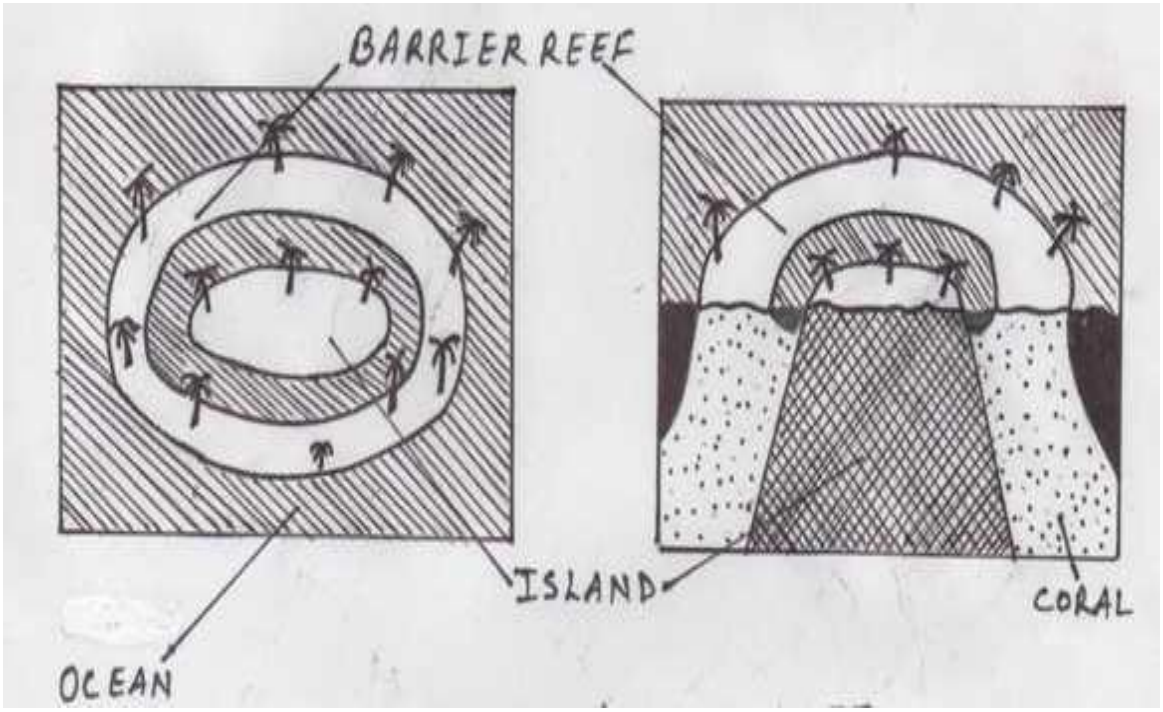

Fig. Barrier Reef

Atoll

An atoll is also termed a coral island or lagoon island. It is a ring-like or horse-shoe shaped reef that encircles a lagoon but not an island. The lagoon varies from a few to about 90 km across.
It may be complete or broken by a number of channels, of which only a few are navigable. Outer side of the reef slopes off rather steeply into the depth of ocean. The atoll of Bikine, famous for atomic and hydrogen bomb tests, lies in the Pacific Ocean (Fig.31).

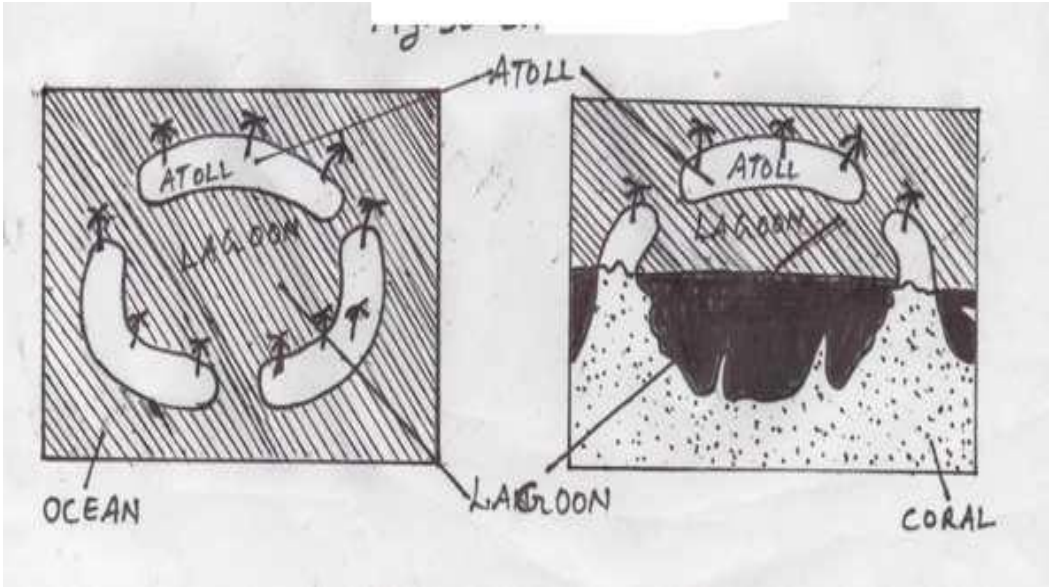

Fig. Atoll Reef

Theories of coral reefs formation

Since the reef building coral are littoral in their habitat and cannot grow below 150 feet, it is difficult to explain the great vertical thickness often attained by the coral reef. Several theories have been put forward by many scientists from time to time. A few important ones are as follows.

Darwin-Dana theory of subsidence-

During his expedition in 1931, Darwin noticed that in the region where coral reefs are found now, a sinking of land had taken place in past. He, therefore, assumed that the corals started their growth as fringing reef around the sloping shores of an island in shallow tropical sea.

By subsidence of the shore of that island they became barrier reef with a lagoon in between. The rate of subsidence ought to have been equal to the rate of coral growth so that they have kept the surface of the reef in level with that of the ocean. The sinking island becomes smaller and smaller and finally disappeared leaving its ring –shaped contour marked in an atoll. Darwin assumed a general sinking of the entire Pacific floor which appears to be incredible. The modern concept is viewed by supposing an independent sinking of each landmass.

Submerged bank theory

According to recent scientists the corals grow to form reef on flat pre-existing surfaces during or after their submergence. This submergence is brought about by the erosion and denudation of an island both above and below water. On complete replacement of the island by a submerged plateau the builders will produce an atoll.

Daly's glacial –control theory

According to Daly's glacial –control theory, during the last glacial period the formation of ice caps lowered the ocean level by 60 to 70 meters below the present surface. Waves cut the shores to make flat platforms suitable for growth of coral. As the ice caps melted and temperature rose, corals began to grow on these platforms and rose upwards with rising ocean levels, and all type

of reef were formed on the pre-existing platform. There is evidence that coral reef are growing today on submerged land and the foundation of reef are now at a much greater depth than they were when corals first began to grow.

Observation of living coral shows that their rate of growth is from 5mm to 20cm per year, thus a 50 meter deep reef could be formed in less than 8,000years and all the known reefs could have been built in less than 30,000 years. Some boring made in coral reef showed that the rested on level platform, but some other boring showed that reefs had no underlying platforms but had only sand and shell below them.

Economic importance of coral reefs:-

Corals of the remote geological past formed reef structures.They were highly favourable sites for accumulation of petroleum deposits. Thus coral reefs are of much importance to oil industry. Large quantities of corals are shipped every year for the curio trade. The coral reefs serve as habitats for many plants and animals like sponges, molluscs, echinoderms, fishes, etc. Some coral reefs are used for habitations by man as well. Some corals are highly prized for their decorative value. *Corallum rubrum* is considered to be a precious coral stone in India and china and treated as auspicious. The red coral and organ pipe coral are used in some indigenous system of medicine in India Chunks of coral skeleton belonging to species porites are used as building materials. Coral skeleton serve as raw material for the preparation of lime, mortar and cement because of their calcium carbonate and magnesium carbonate content. Coral reefs serve as good nursery grounds for commercially important fishes. Reef fish varieties are more colourful than others.