

First notes on the discovery of outcrops of beach rock in the Gulf of Venice (Italy)

by

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Hitherto unreported zones with a rocky bottom, have been recently found off the Italian beaches in the Gulf of Venice (Italy). So far, the North Adriatic sea floor was believed to be only sandy or muddy. This discovery was made during a marine geological research performed by diving. This research was prompted out by the clues obtained by means of a precision echo sounding survey, suggested in its turn by the information gathered among local fishermen.

At present, two areas with rocks on the bottom have been identified. The first, six miles off the beach at Lignano, at a depth of 12 to 14 meters, the second, three miles off the beach of Caorle, at a depth of 12 to 13 meters. Two other areas at least seem to offer good chances of further discoveries : they lie off Cortellazzo and Chioggia.

The outcrops are very discontinuous and scattered over an area of several square miles. They are in form of small, elongated ridges, or blocks, or hard rock pavement. The ridges are a few meters in length and like the pavement (its outcrops are usually a few square meters in size) they rise only a few inches from the flat, sandy, sometimes muddy bottom. The blocks are up to three feet high with a volume of several cubic feet.

The rock is a sandstone, cemented by carbonates, and generally very hard. It appears to be mainly of two different types : the first is a sandstone with very few shell fragments and remarkable lack in structures; the second type is formed by an alternance of sandy layers and shell beds, generally single valves of pelecypodes (mostly *Glycymeris*, *Venus*, and *Cardium*) usually isooriented. A few sandstone slabs were also found, buried in a muddy bottom; they show fine ripple marks on the upper side, and they are formed by few alternate layers of sand and mud. The rock has been locally affected by phenomena of solution and differential erosion, and some exposures have a pitted, fissured and honey-combed appearance. It seems to have been formed in the past, in an environment different from today's, most probably on a beach.

The fauna and flora living on these rocks and all around within a certain range are not to be found along the flat beaches of the gulf of Venice, and show some very peculiar characters.

Further studies are being carried out at present; it is hoped they will solve the problem of the existence and origin of these rocks, and they will tell if the term « beach rock » is strictly and correctly applicable or not.

It has to be stressed that the presence of such beach rock has never been recorded in the stratigraphic sequence of the recent Quaternary of the region.

