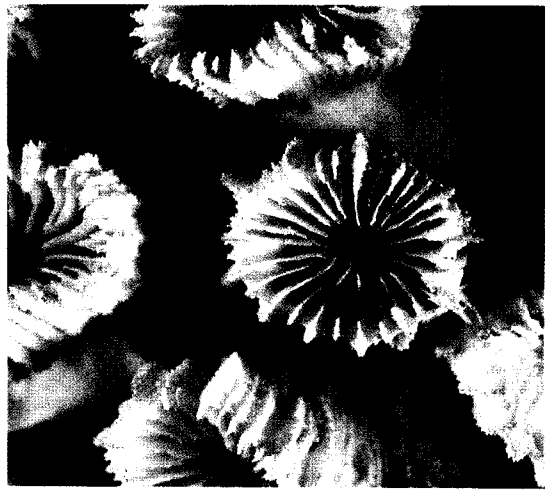
Corals of the family Faviidae

by Jeffrey Low and L.M. Chou

The faviid corals form one of the more important scleractinian families on coral reefs. The family ranks second to Acroporidae, in number of species and overall abundance on local reefs. There are 25 genera worldwide, of which 15 may be found in this region. Most common among these are *Favia*, *Favites*, *Goniastrea*, *Platygyra*, *Diploastrea*, *Echinopora* and *Hydnophora*.

Despite its diversity, however, the faviids share similar reproductive cycles. Most are hermaphrodites (*i.e.* able to produce both male and female gametes), but the species vary in the number and colour of egg masses and the rate of maturation of the gonads. Asexual reproduction occurs as either intra- or extra-tentacular budding. Intra-tentacular budding involves the dividing of a parent polyp into two daughter polyps. In extra-tentacular budding, the daughter polyp buds off from the side of the parent polyp.

Many of the genera can be separated by the structural characteristics of the corallites (the cavity within which the polyp resides). *Caulastrea* colonies are generally small, with corallites that are tubular and separate from each other (phaceloid growth). The septa (plate-like projections within the corallite) are fine and arranged in a star-like fashion. They are usually found on protected reef slopes. Many of the common faviids found here can tolerate turbid waters, and their polyps are only extended during the night. *Favia* is one of them, with a well-ordered, honeycomb-like structure. The colonies are brownish, usually massive, with

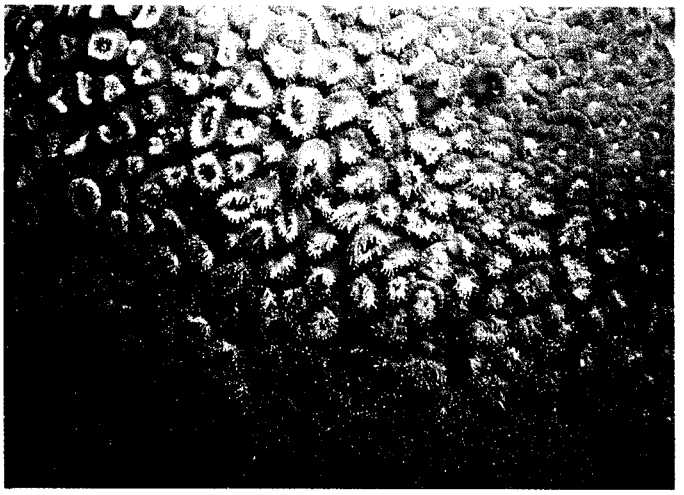


Caulastrea echinulata has separate, tubular and star-like corallites.

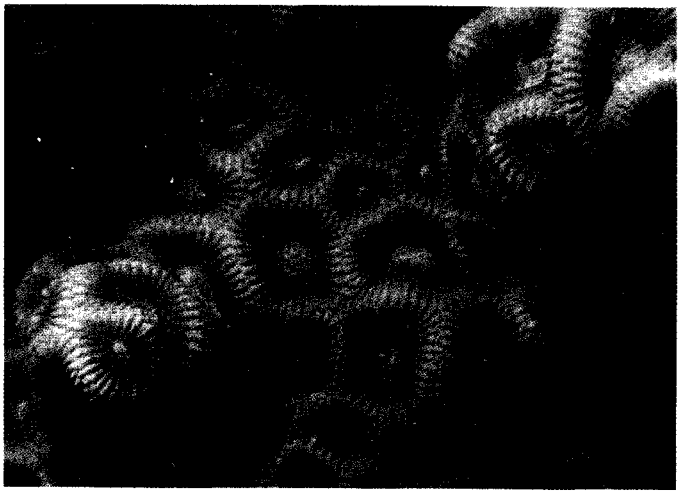
A live colony of *Caulastrea echinulata*.

corallites that have their own walls which are slightly exert. Asexual reproduction is by intra-tentacular budding, forming similar-sized daughter polyps. The polyps, when extended, have tentacles that are transparent with a coloured tip.

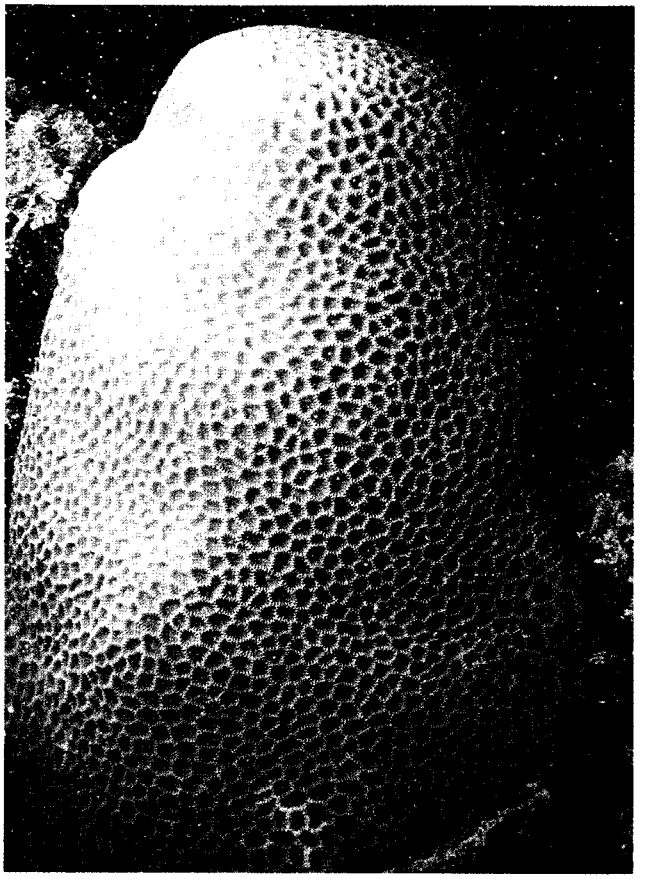
Favites is similar to *Favia*, with colonies of a massive growth-form (boulder-shaped), but the corallites share a raised common wall with prominent, spiny septa. The centre of the corallite is often of a different colour from the rest of the colony, and paliform lobes, which are prominent extensions of the inside of the septa, if present, are poorly developed. This distinguishes them from another close genus, *Goniastrea*, which is probably the most hardy of the faviids. It is able to tolerate exposure to the sun at low tide, and can grow fairly well in muddy conditions and low salinity. Its colonies are massive, occasionally encrusting, and the corallites have polygonal common walls.

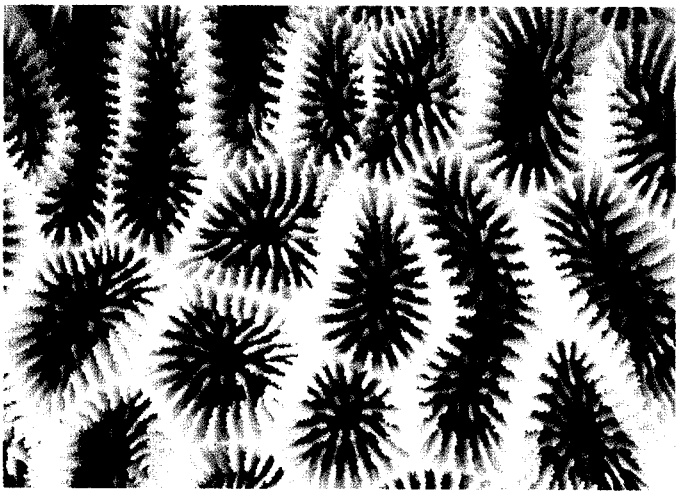


The tentacles of *Favia* are extended only at night.



Some species of *Favites* have corallites of a different colour from the rest of the colony.





The paliform lobes (projections within the corallites) can be seen clearly in the skeleton of *Goniastrea*.

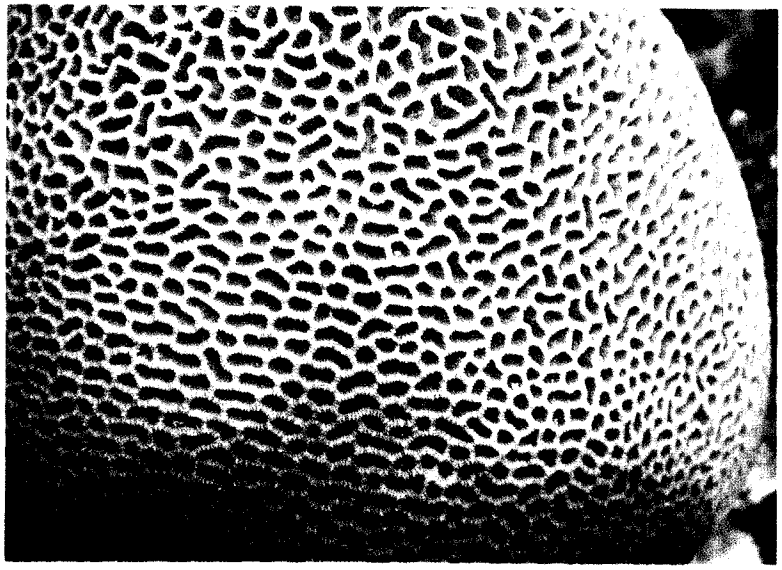
The massive (boulder-like) shape of this *Goniastrea* sp. is a common sight on the reefs.

In some species, short valleys are formed. The main distinguishing feature of the corallite is the well-developed paliform lobes. *Platygyra* has a meandroid structure, which is formed by intra-tentacular budding without the formation of walls between individual daughter polyps. *Platygyra* species are common, and usually found on the upper reef slopes and on reef flats.

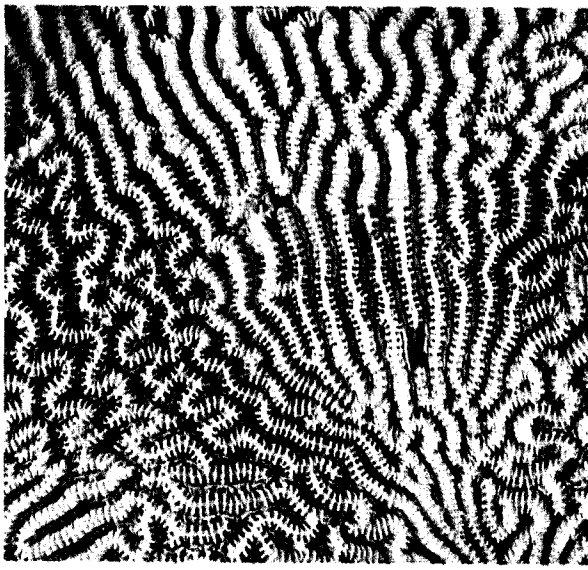
Leptoria is very similar to *Platygyra*, but is differentiated by its very regular arrangement of septa, and its thin and laminate central column (also known as the columellae). The valleys are usually of uniform width and sometimes run parallel to one another.

Another genus with a meandroid structure is *Oulophyllia*, but is distinguished by its broad, V-shaped valleys, its prominent mouths, and the paucity of septa as compared to *Platygyra*.

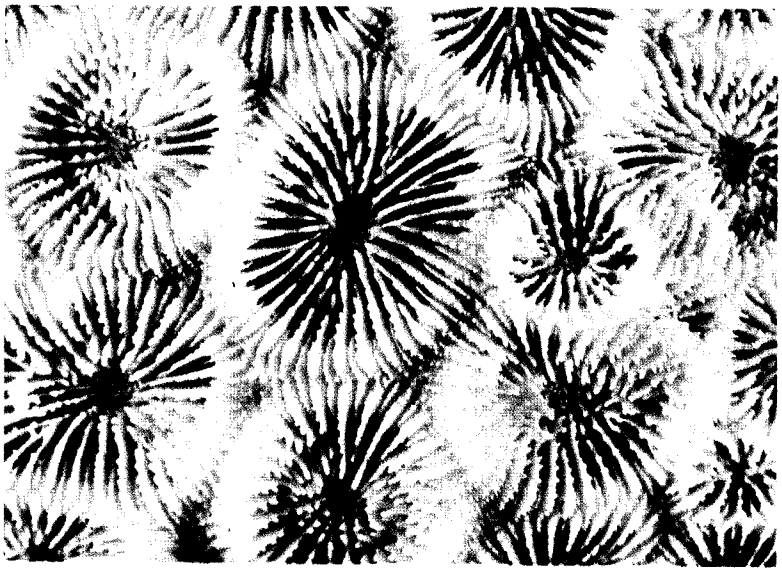
Montastrea grows mainly by extra-tentacular budding, and has tiny grooves and tubercles that can be used in identification. Colonies are brown or green, and are massive in shallow water but plate-like in deeper water.

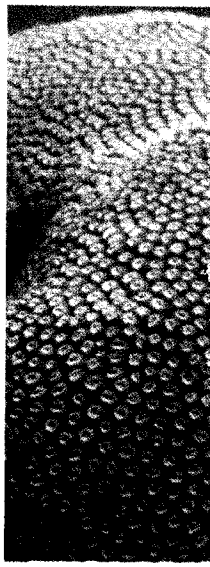


The massive *Platygyra*, with its ridges forming a brain-like structure, is common on reef flats.



Another 'brain' coral of the genus *Leptoria*. The ridges often run parallel to one another.



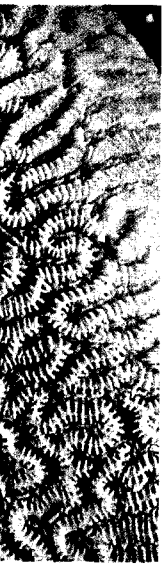


Extra-tentacular budding can be seen in this skeleton of *Montastrea*.

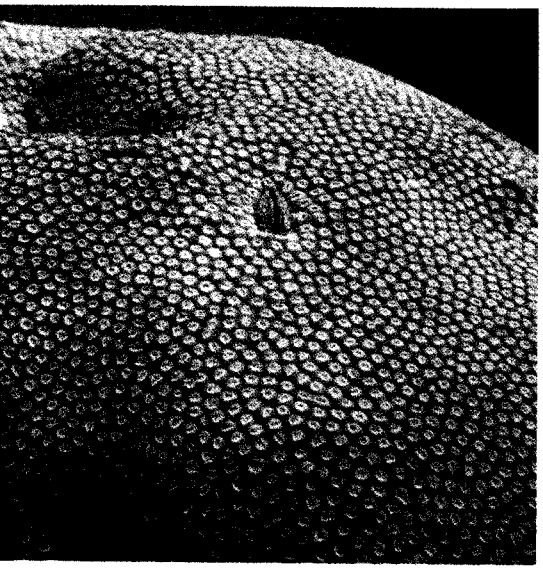
A faviid that is also common and grows to a large size is *Diploastrea*. The structure of this coral is very distinct, and it can attain a large size because of its ability to somehow repel grazers like the crown-of-thorns and boring organisms.

Oulastrea is common as small colonies particularly in heavily sedimented waters. The colonies are usually encrusting, with a distinctive black skeleton and white septa.

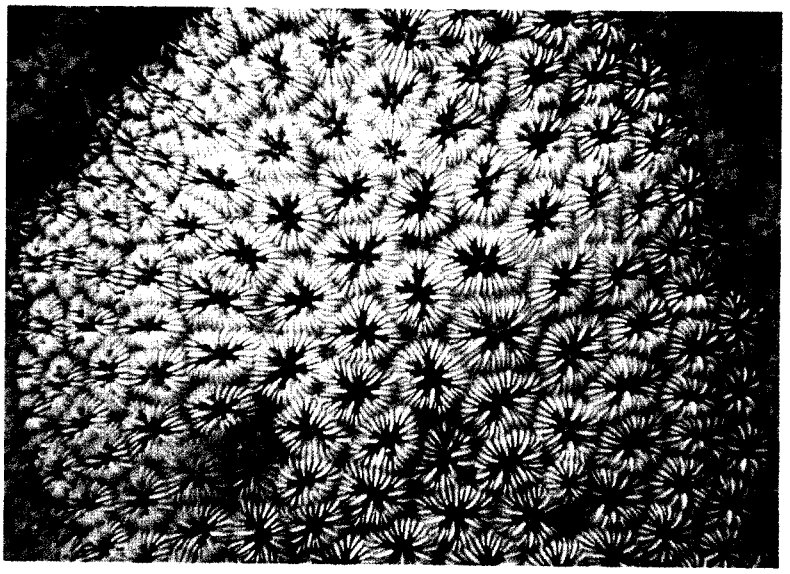
Leptastrea and *Cyphastrea* are also common, and relatively easy to recognise. In the former, the corallites show considerable size variation with a circular arrangement of septa, which have inward-projection dentition, and vertical pinnules that make up the columellae. *Cyphastrea* has corallites that do not share a common wall and are conical (plocoid growth). Costae, which are projections on the outside of the corallite wall, are restricted only to the corallite wall. The coenosteum, the area between the corallites, is granulated.



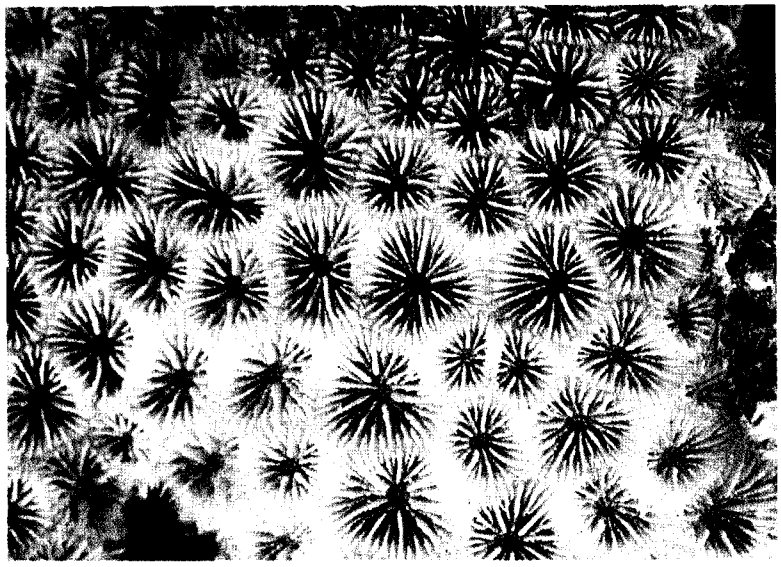
Oulophyllia sp., not as common as *Platygyra* sp., but can be distinguished by their broad, V-shaped valleys.

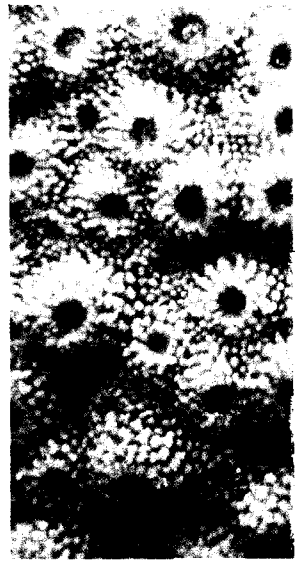


Large colonies of *Diploastrea heliopora* are common on reef slopes.



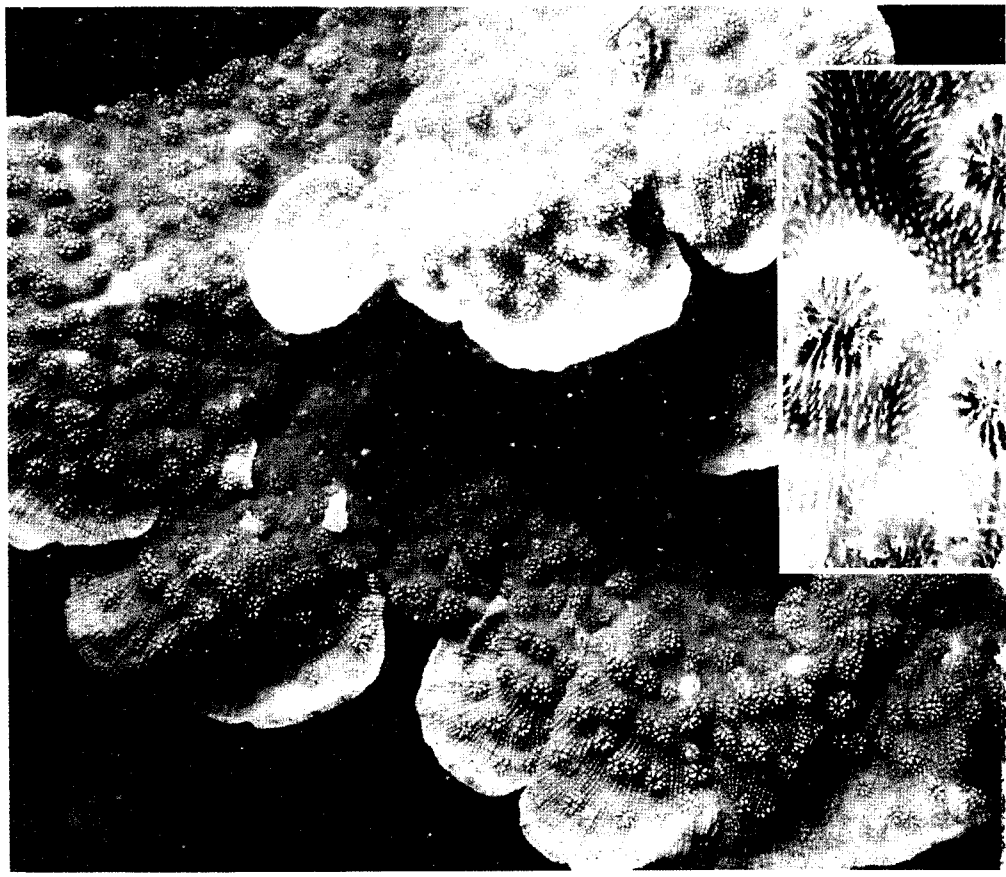
Oulastrea sp., characterised by a black skeleton with prominent white septa.





Leptastrea sp., although with corallites of varying size, the distinct arrangement of the septa makes identification easy.

The growth form of *Echinopora* can be complex, as shown by this arborescent colony.



common and large genus is *Echinopora*, which has varying growth forms. Encrusting plates may grow stacked atop each other (foliaceous or arborescent), or branches may develop from an encrusting base. It is not unusual to encounter combinations of the growth forms in one colony. The corallites also show plocoid growth, with exert and irregular septa which are spiny. The costae are restricted to the corallite wall and the coenosteum is also spiny, which gives this genus its name.

Hydnophora, also relatively common, has very distinct sharp-tipped, cone-shaped corallites, which are joined at the base, but do not form ridges. The septa are visible as fine, smooth ridges, and the polyps are usually partially extended during the day. Colonies are pale green to yellow and the species can be identified by their growth form.

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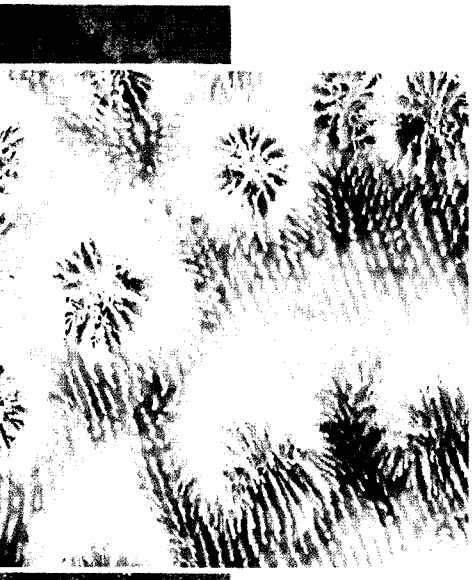
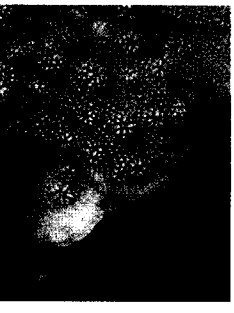
Cyphastrea sp., with corallites that have their own wall and are conical in shape (plocoid growth).





Echinopora sp., with very spiny septa and coenosteum.

Hydnophora sp.: common on the reefs, and the conical, sharp-tipped corallites are quite distinctive.