

IV. — ON TWO DIFFERENT GROWTH-FORMS OF *MERULINA LAXA*, DANA

BY DR. H. BOSCHMA. WITH PLATE I.

It is a well-known fact that in many species of reef-corals the form of different colonies is largely subject to external influences that affected it during its growth. Not only in different colonies is this variability found, but also parts of the same colony may offer a striking contrast when compared with one another. One of the causes that modify the growth-form of various colonies of reef-corals, especially of the branching ones, is the action of the waves that roll in upon the reef after they have been more or less dissolved at the edge. These waves constantly sweep over the tops of the coral-colonies so as to prevent them to grow in height above a certain level. Together with the larger colonies whose tops are constantly in contact with the waves there usually are smaller and younger ones growing in shallow places between the former. As a rule these smaller colonies are much more regularly built: they display in all directions an almost equal development. In their further growth the tops of these colonies at last also reach the level of wave-action and from that time the uppermost parts are constantly in contact with these waves. Then in many species no further increase of height takes place, but the highest part of the colony tends to enlarge itself in a lateral direction by the formation of thicker and larger branches as may be observed in colonies of *Pocillopora* and *Montipora*. The same formation of irregular and stunted branches is observable in specimens of *Montipora* that are exposed to strong currents ¹⁾.

In other species the lateral growth-tendency gives rise to the formation of a multitude of small branches that form a dense mass on the top of the colony. This phenomenon I observed in the higher parts of *Merulina laxa* Dana that grow in abundance on the reef of a small island (Huisman's Eiland) near Sebesi in the Sunda Straits. The youngest colonies of this species and also those larger ones that grow in somewhat deeper water answer in every respect to Dana's description:

"*Merulina laxa*. Ramose, branches divaricate, often coalescent, with the branches angular, often alate and compressed, $1\frac{1}{2}$ to 3 lines thick, sometimes $\frac{1}{2}$ an inch broad and subpalmate; ridges small, acute, sometimes

1) cp. F. Wood-Jones, Corals and Atolls. London 1910.

elongato-conical, lamellae lax, very oblique and ascending, much more lax at apex" ¹⁾).

In those colonies whose tops are in constant contact with the waves the lower parts do not differ from the normal colonies of this species growing in smooth water. The branches of these parts have the same thickness as is mentioned by Dana and they spread profusely in all directions. The apical parts, however, form densely crowded masses of slender irregular branches, whose tops are all on the same level, viz. the depth that is just reached by the waves. Only the upper portions of these branches are covered with living tissue, whilst in the typical, widely spreading branches the soft parts are found on the whole of their surface. When we compare such an upper part of a colony of *Merulina laxa* with the lower parts of the same colony these two seem to belong to quite different species. In fact the abnormal uppermost parts of these colonies possess all the characteristics of *Merulina prolifera* Quelch, the diagnosis of which is:

"*Merulina prolifera*. Corallum small, ramose, with the branches very slender, much divided, closely crowded, and very coalescent; forming dense, intricate clumps, covered above with dense clusters of small branchlets, which are angular, irregular, and often much flattened, alate, palmated and divaricate; the branches are from 3 to 5 mm. thick, widening at the point of origin of the branchlets. The ridges are very small, narrow and elongated on the branches and almost obsolete; more distinct on the branchlets where they are much raised and very acute. The calicinal centres are very indistinct; the septa are narrow, closely placed and short on the branches, less crowded, long and broad on the branchlets, especially on the extreme apical parts, where they are very prominent" ²⁾).

The figures on plate I represent two parts of the same colony of *Merulina laxa*, on the left a portion of the apical region, on the right a portion of the lower region of this colony. At first sight the contrast between the widely spreading branches of the typical *Merulina laxa* and the coalescent slender, crowded branches of the fragment of the apical region that answers to the description of *Merulina prolifera* is very striking. In the higher lateral region of the colony, from which these two fragments were broken, there was a gradual transition from the small coalescent branches into the typical growth-form.

Besides the two parts of one colony described above two larger fragments of other colonies of *Merulina laxa* were collected in the same

1) J. D. Dana, Zoophytes U. S. Exploring Expedition, 1848, p. 276.

2) J. J. Quelch, Report on the Reef-Corals. Challenger Expedition. Zoology, Part XLVI, 1886, p. 110.

locality. Each of these forms a clump about 15 cm. in height and about 30 cm. in larger diameter. These fragments represent intermediate stages between the figured specimens. In one of them, a part of a colony with somewhat thicker branches than usual, the formation of aberrant branches has but recently begun in the apical region. Here the branches are very clearly coalescent, their tops are broadened and have given rise to some smaller branches, a great many of which have grown out in a horizontal direction, at a right angle with the lower portion. All branches in this colony were entirely covered with living tissue.

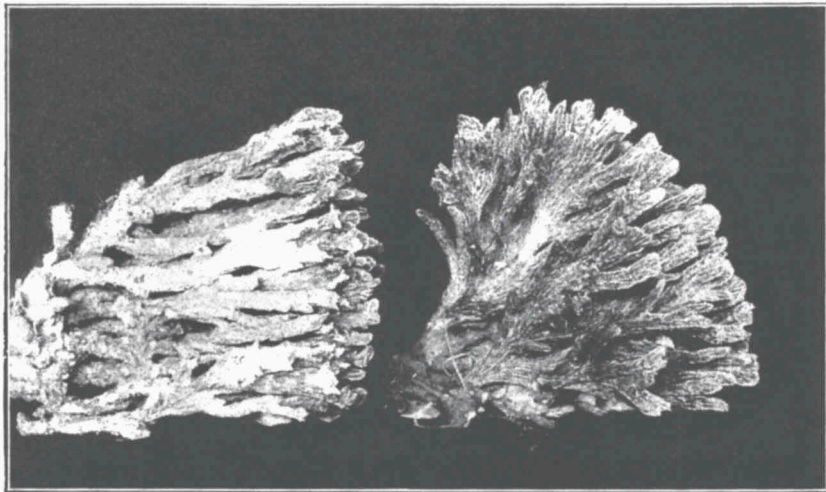
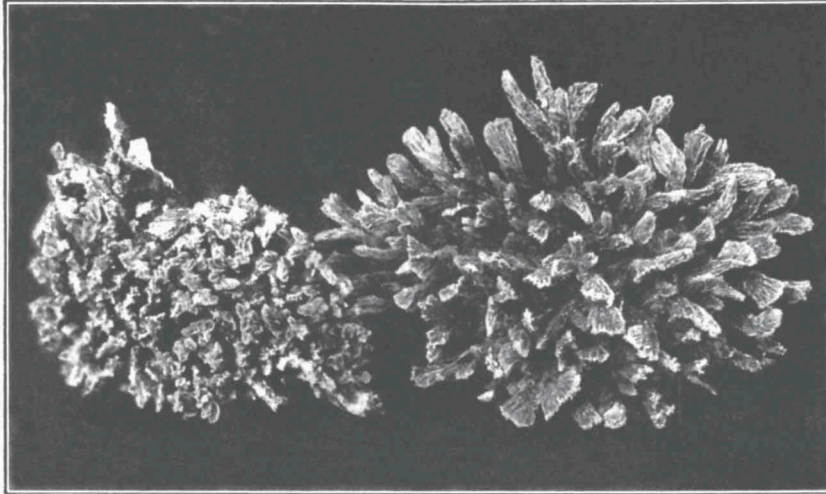
In the other fragment the strongly coalescent branches of the apical part of the colony form a crowded mass with the tops of the branches nearly all on a level. In this specimen the formation of irregular small branches is already very conspicuous, though it is not yet so strikingly pronounced as in the fragment on the left of plate I. In some parts of this colony where the branches are very crowded and strongly coalescent, only their uppermost portion had living tissue, the basal parts consist only of bare skeleton. If the formation of small branchlets on the top of the colony had proceeded further, doubtless still more of the living parts would after some time have died off.

From the above facts it may be concluded that *Merulina prolifera* Quelch is only a synonym of *Merulina laxa* Dana.

The four fragments of colonies of *Merulina laxa* in which the peculiarities as described above are visible, are in the collection of 's Rijks Museum van Natuurlijke Historie at Leiden.

EXPLANATION OF PLATE I.

Merulina laxa, Dana. Two fragments of the same colony. $\frac{2}{5}$ nat. size.



Merulina laxa Dana.