Zoology Part XXI: Report on the ORBITOLITES. Specimens of the Genus. By W. B. Carpenter. Bound in Volume 7,1883.

dial segment of the other gives off a far thicker cord, which only makes a single turn. It can scarcely be doubted, I think, that this circumambient segment represents the whole of the original "spiroloculine" coil drawn up into itself, and thus perpetuates, under a form which at first sight appears entirely unrelated, the "milioline" plan of origin; thereby giving the key to the import of this "nucleus" in the more specialised forms to which we shall next proceed.

From this point of view, it is a circumstance by no means insignificant, that even the varietal forms of this well-marked species present a gradational transition to the next, in the diminished excentricity of the "nucleus," the less marked restriction of outgrowth to one side of it, and the consequent earlier exchange of the spiral for the cyclical plan of growth.

Geographical and Bathymetrical Distribution.—This species appears to be pretty generally diffused along the littoral zone of the warmer temperate and tropical seas, being met with abundantly in shore-sands and in shallow-water dredgings. It seems least common, however, in West Indian seas, where it is replaced by the small varieties of *Orbiculina adunca*. The largest specimens of it hitherto obtained are those brought up in the 18 fathoms' dredging of the Challenger on the Fiji reef. So far as can be judged from the specimens contained in shore-sands, this type attains a much smaller size in the Red Sea, although numerically abundant. And it would seem to die out in the Mediterranean and Ægean, where it is a comparatively rare form, and stunted in its growth. Hence its most congenial habitat may be said to be the littoral zone of tropical or sub-tropical seas.—It is worthy of note that the small Red Sea disks often have their surface-layers thickened by an irregular exogenous deposit of shell-substance, which obscures the cyclical arrangement that is so conspicuous in the large Fijian specimens. The somewhat larger disks of Philippine and Australian shores often exhibit irregular radiations of such deposit; but between these radiations the cyclical arrangement is generally conspicuous.

Geological Distribution.—Among the *Orbitolites* that have been described as fossil there does not seem any that is distinctly referable to this type. I am inclined to think, however, that the *Cyclolina armorica* of d'Archiac, the *Archiacina armorica* of M. Munier-Chalmas (to whose kindness I am indebted for specimens of it), may be regarded as an ancestral form of *Orbitolites marginalis*. Though the diameter of its disk does not exceed that of the largest specimens of *Orbitolites marginalis*, its thickness is two or three times greater; this excess being partly due to the thickness of the superficial shell-deposits, and partly to that of the chambered layer they enclose. The cavitary system appears, in its earlier stage, to have been distinctly "peneropline," without division of the chambers into chamberlets; and to have early become "cyclical" by the extension of

http://19thcenturyscience.org/HMSC/HMSC-Reports/Zool-21/README.htm