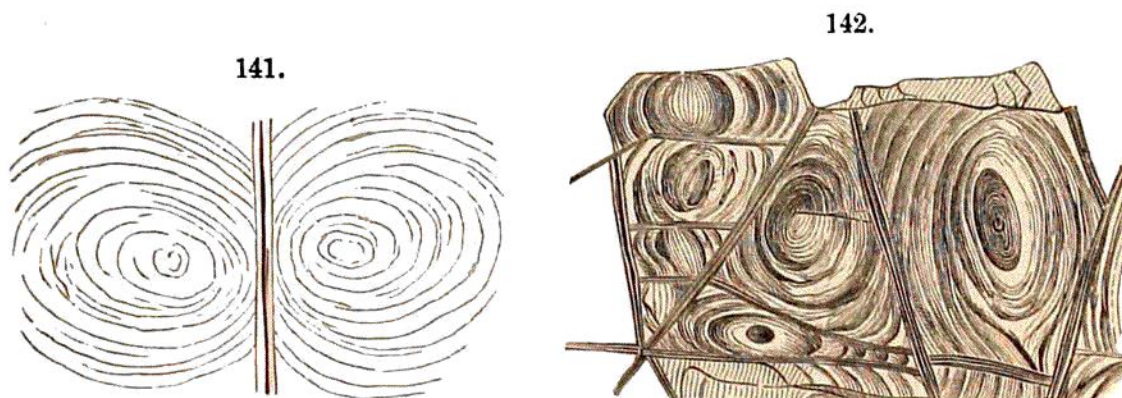


this mode of origin. The two sets of rings were either side of a crack in the rock, and had together a diameter of about twenty feet.

Fig. 142 represents concentric areolets between mud cracks in an argillaceous shale, made by siliceous waters at the time of the consolidation, when the mud cracks were likewise filled with quartz, a layer of quartz being



141. Concentric discoloration, Illewarra, N.S.W. D. '49.

142. Concentric structure, Australia. D. '49.

deposited against each wall. Whether in this case the concentric consolidation was centrifugal or centripetal is not ascertained. Seashore wear of the rock brought the structure to view.

See further, on *Lithophysæ*, page 337.

II. LIFE: ITS MECHANICAL WORK AND ROCK CONTRIBUTIONS.

The making of rocks out of organic contributions, and the protective, transporting, and destructive effects of life, are the subjects here under consideration.

GENERAL REMARKS ON ROCK-MAKING.

1. Materials Afforded by Plants and Animals.

The organic contributions to rock-making are mentioned on page 71. It appears that

PLANTS afford —

Calcareous material for rocks: mainly through Nullipores and Coccoliths, and other calcareous Algæ or the lowest of Cryptogams.

Siliceous material: through Diatoms, and some confervoid Algæ; and sparingly through other plants, the ashes of which afford some silica and alumina.

Carbonaceous materials: through plants of all kinds, but especially those that flourish in wet soils and marshes, where means of burial are convenient.

ANIMALS afford —

Calcareous material: through Rhizopods among Protozoans; Spongiozoans with calcareous spicules, to a very small extent; Actinozoans, or the Corals; Hydrozoans of the Hydroid section; the lower Echinoderms or the Crinoids and Cystoids, and other Echinoderms sparingly; Molluscoids, as the Brachio-