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Previous workers (Theel 1892; Woodland 1906; Prenant 1926) have hinted that the skeletal form in sea urchin larvae must be predetermined by the organic skeletal matrix in which the calcification takes place. However, their descriptions concerning the skeletal matrix itself are not in detail. Therefore, a detailed observation was made to find a structure which could be considered as a skeletal matrix, using *Clypeaster japonicus* larvae which are transparent and have a relatively large blastocoel. The results from the observations of normal larvae and some experiments can be summarized into the following seven points: (1) At the beginning of formation, the skeletal matrix is found among the primary mesenchyme cells as a hyaloplasmic mass with fine processes. As the stage advances, the hyaloplasmic mass is gradually organized to a triradiate form. (2) Skeletal matrix is very likely to originate from a single primary mesenchyme cell. (3) Organization of the skeletal matrix is invariably a step in advance to the skeletal development. (4) Shape of the matrix is governed by the pattern of the primary mesenchyme cells, which arrange themselves in an orderly triradiate fashion in normal larvae. (5) The skeletal matrix is connected with the surrounding mesenchyme and ectoderm cells by fine processes. (6) Abnormalities of the skeletal form induced by various experimental conditions are correlated with the deformation of the skeletal matrix. (7) Retardation of skeletal growth has no influence on the form of the skeleton, as long as the form of the matrix is not changed.