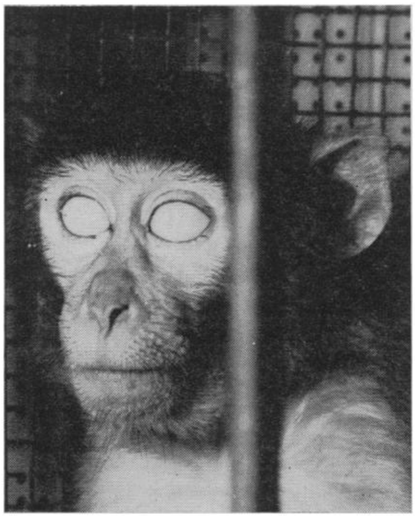

Fig. 1. Monkey with occluders.

operation is polishing, which is done on a soft cotton buffing wheel with tripoli or some other polishing compound. If no sharp edges or roughness are found, the occluders are ready for cleaning and use.

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References and Notes

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6. We have since learned from Austin Riesen that Leo Ganz, in the department of psychology at the University of Chicago, has been independently developing this technique for use with cats to produce, among other things, a colored Ganzfeld (!).

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Spatial Distribution of Phoronopsis viridis Hilton

Abstract. Individuals of the species *Phoronopsis viridis* Hilton exhibit an even distribution within their colonies. The distance between nearest neighbors is probably related to the space required for the operation of the lophophore. Distributions of other marine invertebrates are discussed briefly, together with the paleoecological implications of such knowledge.

The horizontal spatial distribution of *Phoronopsis viridis* Hilton was studied in three intertidal areas on the shores of Tomales Bay, California (*1*). Observations on the nearest-neighbor relationships of *Phoronopsis* were taken and analyzed after the method proposed by Clark (*2*). Individuals of this species occur in clusters of thousands throughout the areas studied. While the clusters or colonies possibly develop as a response to very local environmental features, field examination revealed no obvious differences in the sediment at colonized and noncolonized sites. The first-nearest-neighbor relationships were observed for 384 individuals chosen at random within colonies.

The proportions of first-nearest-neighbor relations that are reflexive in each of the samples are shown in Table 1. The proportions for each locality are not significantly different from one another when tested by chi-square [$Pr(X^2 \geqq 1.004) > 0.05$]. The number of reflexives (218) in the pooled data from all three sites was found to be significantly less than that expected for a random distribution (239) [$Pr(X^2 \geqq 4.66) < 0.05$]. This result is taken to indicate that individuals of *P. viridis* tend to be distributed evenly within the colonies.

The pattern of dispersion suggested by this analysis probably reflects direct interaction between individuals. After a heavy settlement, the growing animals must compete for space for expansion of the lophophore during feeding. Such competition would be expected to result in an even spacing of individuals in densely populated areas. At the borders of the colonies studied, individuals appear to be less crowded together and likely to be distributed at random. These circumstances are paralleled by the case of the clam *Tellina tenuis* reported by Holme (*3*). In feeding, this small clam sweeps the surface of the substrate with its inhalant siphon. The even spacing of *Tellina* observed by Holme was found to be statistically significant by Connell (*4*). The minimum distance between individuals is thus apparently related to mode of feeding in *Tellina* and *Phoronopsis*.

Connell, using a procedure similar to that employed here, studied the spatial distribution of two species of clams, *Mya arenaria* L. and *Petricola pholadiformis* Lamarck (*4*). He found that the clams were distributed in aggregations in the area of study but at random within the aggregations. He has suggested that this is the most common pattern for sedentary, bottom, filter feeders.

The pattern of spatial distribution of sedentary marine invertebrates can have important implications in marine ecology and paleoecology. Patterns of dispersion are important clues to larval behavior, interactions of individuals, and the nonuniformity of the physical environment. Knowledge of the kinds of patterns characteristic of particular taxonomic groups or modes of life may also be useful in the interpretation of the mode of formation of fossil assemblages. In this regard, such information can aid in recognition of an assemblage that has been buried in place with a minimum of exposure after death. Patterns of spatial distributions of fossils have been determined by techniques similar to those employed here. Miller has used nearest-neighbor relations in an attempt to determine current direction in an ancient, black-shale environment (*5*). For all of these purposes, more modern analogs are needed (*6*).

Table 1. Proportion of nearest-neighbor relations that are reflexive in each of the samples.

Sample	Size	Proportion
1	99	0.53
2	114	0.59
3	171	0.58

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References and Notes

1. Locality 1 was in the small cove immediately north of White Gulch; locality 2 was on the flats east of Lawson's pier; and locality 3 was on the flats near the creek on the south shore of White Gulch (see U.S. Coast and Geodetic Survey Chart 5603, 1957).
2. P. J. Clark, *Science* 123, 373 (1955).
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6. This investigation is part of studies supported by a grant from the Louis B. Block Foundation and made possible by the cooperation of the Pacific Marine Station of the College of the Pacific.

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Production of Spherules from Synthetic Proteinoid and Hot Water

Abstract. When hot saturated solutions of thermal copolymers containing the 18 common amino acids are allowed to cool, huge numbers of uniform, microscopic, relatively firm, and elastic spherules separate. The place of this phenomenon in a comprehensive theory of original thermal generation of primordial living units is considered.

A comprehensive theory of the spontaneous origin of life at moderately elevated temperatures from a hypohydrous magma has been developed (*1*). The theory results from experiments which have yielded linked reactions in sequences akin to many in anabolism (*1*), materials which closely resemble protein in qualitative chemical composition and physical properties studied (*2*), and a biointermediate for nucleic acid, ureidosuccinic acid (*3*).

The material with attributes of synthetic protein, *proteinoid*, is easily produced by employing sufficient excess of