Polyacrylamide gel electrophoresis of dogfish plasma at pH 8.6 reveals four well defined bands, none of which migrate like human or rat albumin. No BSP is bound when electrophoresis is performed at pH 8.6. Electrophoresis at pH 7.6 reveals the same discrete protein bands. Up to plasma BSP concentrations of 50mgm% most of the BSP in plasma at pH 7.6 is bound to a single protein having migratory characteristics of an alpha-globulin. The protein band was eluted from electrophoresis gels and equilibrium dialysis experiments were performed using this protein, human albumin, different concentrations of BSP, and a range of pH. Seven preliminary experiments reveal the following: (1) At pH 8.6 dogfish plasma does not bind BSP, and human albumin binds poorly. (2) At pH 7.6 dogfish plasma (and the isolated protein) bind BSP well (68% of 40mgm% BSP bound/2ml protein in 30cc volume) but not as well as human albumin (92% of 40mgm% BSP bound/2ml protein in 30cc volume).

It is of interest that the hepatic uptake of BSP in these experiments tends to parallel the binding capacity of the fish and human transport proteins in vitro. These observations must be extended, but they tentatively suggest that uptake of BSP by fish liver depends on ionization of BSP; and that direct protein-linked transfer probably does not occur. These suggestions have stimulated the design of further experiments in mammals to test this postulate.

1965 #3

STUDIES ON THE AUTECOLOGY OF THE CILIATE Urceolaria spinicola

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In the preceding study of the present series on urchin ciliates (Beers, C. D., 1964. Jour. Protozool., 11: 430-35), Urceolaria spinicola was named and described, and incidental observations were reported on its distribution on the spines and pedicellariae of the sea urchin Strongylocentrotus droebachiensis.

In the present study, quantitative data are being assembled on the following aspects of the urchin-ciliate association: (1) distribution of the ciliate on individual spines; (2) distribution on spines from different regions of the urchin test (circumoral, ambital and aboral; ambulacral and interambulacral); and (3) distribution on urchins of different age-groups (age estimated from diameter of the test).

As of September 1, 1965, there has not been sufficient time for a critical analysis of these data, but preliminary inspection of them seems to permit the following conclusions. (1) The ciliate is uniformly distributed over the surface of the small spines (length, 1.0-2.9 mm); it is restricted to the proximal half of the medium-sized spines (length, 3.0-5.9 mm); and it is extremely scarce or absent on the long spines (length, 6-15 mm). Spine lengths here relate to urchins of the size usually encountered, that is, 2.5-6.0 cm in diameter. (2) Spines from different regions of an individual urchin show fairly uniform intensities of faunation, although intensities vary considerably in different urchins. (3) In general, urchins 2 to 4 years of age (2.5-5.5 cm in diameter) show the highest levels of faunation.

An effort is being made to explain the differential distribution on individual spines, but the factors that account for such distribution are not readily apparent.

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