indicating that the latter two require environmental copper for polymerization of collagen. A copper-protein complex has been identified in the skin of adult *Fundulus* using acrylamide gel electrophoresis. This complex migrates as an α-globulin and might mediate the polymerization of collagen in this tissue.

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The effect of hyperbaric oxygen upon the embryonic development of Arbacia punctulata. PAUL M. HEIDGER, JR., ROBERT G. SUMMERS, AND JAMES A. MILLER, JR.

The observation of Miller *et al.* (1969) that hyperbaric oxygen blocks both embryonic development and succinic dehydrogenase activity in the hydroid, *Tubularia,* prompted an investigation of the effect of hyperbaric oxygen (HBO) upon the embryonic development of *Arbacia* from fertilization to the time of formation of the pluteus larva. Fertilized eggs were incubated in sea water at 16° C in air or in 3 atmospheres absolute pure oxygen in a hyperbaric chamber. Pressure control experiments using 1 atmosphere oxygen and 2 atmospheres nitrogen were conducted to determine that changes observed were due to high pressure oxygen and not merely to high ambient pressure. Animals exposed continuously to HBO for 48 hours were arrested in the gastrula stage; the archenteron was observed to form at 32 hours, but to regress, resulting in an unorganized sphere of cells. If removed from HBO at 48 hours, over 90% of these inhibited embryos proceeded to form normal pluteus larvae within 100 hours following removal. Embryos introduced to HBO following development in air for the first 12 hours after fertilization failed to form plutei by 72 hours, whereas controls did so within 48 hours. Embryos subjected to HBO, following up to 30 hours in air, reached the prism or pluteus stage, but died within 72 hours post-fertilization. Embryos subjected to HBO following 36 hours of development escaped both the inhibitory and lethal effects of HBO and proceeded to form normal plutei by 48 hours.

Hyperbaric oxygen blocks the activity of sulfhydril-containing enzymes, of which succinic dehydrogenase and glucose-6-phosphate dehydrogenase are examples. The high activity of both of these enzymatic activities during the gastrula stage of development in the sea urchin (Backstrom, 1959; Gustafson and Hasselberg, 1951) suggests that depression of the activity of these enzymes by HBO may contribute to the failure of the hyperbaric oxygen treated embryos to complete gastrulation.

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Biogeography of sand beach Gastrotricha from the northeastern United States. WILLIAM D. HUMMON.

A study of 16 beaches, ranging from Long Island, New York, to the New Hampshire border, was completed. Each was analyzed by means of a whole beach transect involving 80–120 faunal samples interspersed from low to high tide-levels and surface to ground-water depths. Ten of the beaches were situated in pairs on five long-shore bars to study the effects of beach exposure on species diversity and population dispersion. Beaches were selected in part to determine whether or not Cape Cod acts as a meiofaunal barrier to intertidal Gastrotricha.

A total of 23 species of Macrodasyida and 19 species of Chaetonotida were found, with 4–20 ($\bar{X} = 11$, s.d. $= 4$) species per beach. The number of species per beach, though not necessarily the number of individuals, tends to decrease with increasing exposure to wave action (4–6 species on the three highest-energy beaches) and to decrease with increasing organic matter (7 species on the most detritus-laden beach). Populations tend to be dispersed more deeply in exposed beaches and more shallowly in beaches having a high organic content than in clean, semi-protected beaches. Individual species were found on 1–16 ($\bar{X} = 4$, s.d. $= 4$) beaches, at the extremes with 15 species found on only one beach, 7 species on two beaches, two species on 15 beaches and one species on all 16 beaches. Of 27 found on two or more beaches, 25 were found both north and south of Cape Cod, indicating that Cape Cod does not act as a significant faunal barrier for this portion of the meiofaunal community.

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