of the urchins that contained dividing specimens of each species was calculated for each period.

Division began in <u>E. borealis</u> after 10-15 hours of feeding, and dividing specimens were present for about 3 days in 33-79% of the urchins of the respective periods. It began in <u>M. indomita</u> after 50-60 hours; dividing specimens were present for about 2 days in 25-96% of the urchins. It began in <u>B. gracilis</u> after 20-30 hours, and dividing specimens were present in all the urchins after the second day.

Thus, division ceased when the urchins were starved and resumed when they were generously fed. Results compiled from various sources, including the present study, indicate that division proceeds uninterruptedly in <u>B. gracilis</u>, provided any appreciable amount of food is present in the urchin gut, but that it is a discontinuous process in <u>E. borealis</u> and <u>M. indomita</u>. However, it is doubtful that cycles of division are inherent in them. It seems more likely, in view of the present results, that their division is correlated with the copious ingestion of suitable bacteria, whose numbers are greatly augmented by the presence of abundant food in the urchin gut.

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SOME EFFECTS OF FEEDING IN THE SEA URCHIN <u>Strongylocentrotus droebachiensis</u> ON DIVISION IN THREE OF ITS ENDOCOMMENSAL CILIATES

C. D. Beers, University of North Carolina, Chapel Hill, N. C.

Dividing individuals of <u>Biggaria gracilis</u> occur in nearly every adult urchin at Mt. Desert Island, but dividing specimens of <u>Entodiscus borealis</u> and <u>Madsenia indomita</u> are present in only about 3% of them. Thus, it was suggested earlier (Beers, 1948) that cycles of division are inherent in these two ciliates.

Urchins were starved for 2 weeks; dividing ciliates were absent in them. Groups of them, totaling 294 urchins, were then fed generously on <u>Laminaria</u> during 5-day experimental periods. They were examined at various hourly intervals and the condition of the ciliates with respect to division was recorded. The records were arranged by successive 8-hour periods, and the percentage of the urchins that contained dividing individuals of each species was calculated for each period.

Division began in <u>E. borealis</u> after 10-15 hours of feeding by the host, and dividing specimens were present for about 3 days in 33-79% of the urchins of the respective periods. It began in <u>M. indomita</u> after 50-60 hours; dividing specimens were present for about 2 days in 25-96% of the urchins. It resumed in <u>B. gracilis</u> after 20-30 hours, and dividing specimens were present in all the urchins after the second day.

The results indicate that division proceeds uninterruptedly in <u>B. gracilis</u>, provided any appreciable amount of food is present in the urchin gut, whereas it occurs discontinuously in <u>E.</u> <u>borealis</u> and <u>M. indomita</u>. It is doubtful that the cycles of division reported earlier are inherent. It seems more likely that they are correlated with the copious ingestion of suitable bacteria, the numbers of which are greatly increased by the presence of abundant food in the urchin gut.