Patient	Salient findings	Agglutination titre		
		Direct test	Coombs test	Blocking test
1	Intermittent pyrexia, 3 weeks	< 1/20	1/640	Neg. 1/20
2	Intermittent pyrexia, 2 months	< 1/20	1/320	Neg. 1/20
3	Chronic brucellosis, 1 year 8 months	< 1/20	1/2560	1/80
4	Undulant pyrexia, 3 weeks	< 1/20	1/1280	1/40
5	'Brucellosis', 4 months	1/1280* (partial)	1/1280 (complete)	1/80
6	'Brucellosis' (recovered), 8 months (treated with aureomycin)	1/640*	1/640	1/40
7	Pyrexia hepatosplenomegaly, 3 weeks	1/5120*	1/5120	1/20
8	Undulant pyrexia, 6 weeks	1/2560*	1/2560	1/80
9	'Brucellosis', 5 months	1/640*	1/1280	1/40

* Prozone evident

The test has proved negative in a number of other sera submitted for Widal and *Brucella* agglutination tests.

Further work on the application of this test to the investigation of suspected brucellosis, supported by cultural studies, is being carried out ; but it appears that bacterial agglutination may prove a useful tool to workers on the valency of antibodies who have hitherto employed *Rh* hæm-agglutination reactions extensively.

Incomplete and blocking antibodies apparently of a parallel nature to *Sal. typhi* and *Sh. shiga* in sera from normal and immunized persons have been reported by Morgan and Schutze[5].

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Carotenoid Metabolism during Development of Lobster Eggs

IT is well known that the majority of aquatic animals mobilize carotenoids into the ova during the spawning season; but probable reasons for this have only recently become apparent. The important work of Steven[1] has shown that lutein and astaxanthin are transferred quantitatively from the yolk of brown trout (*Salmo trutta*) eggs to the developing embryo, where they are incorporated into the chromatophores, thus ensuring that the young larvæ are very soon fully equipped from this point of view. None of the astaxanthin or lutein is used up during embryonic development, which suggests that these pigments play little, if any, 'metabolic' part in this process. The traces of β-carotene present do disappear during development, probably owing to conversion into vitamin A. Morton and Rosen[2] have shown that no carotenoid is used up during the embryonic development of salmon.

It was considered of interest to see if a marine arthropod behaved in this way, or whether it followed the pattern observed by Goodwin[3] using the locusts *Schistocerca gregaria*, and *Locusta migratoria migratorioides*. In these insects the amount of β-carotene (which is present in considerable amounts in the newly laid egg) decreases during embryonic development and is, in part, converted into astaxanthin. The most convenient marine animal for this type of work is the common lobster, the eggs of which contain only a single carotenoid, astaxanthin, which is attached to a protein to yield a water-soluble green pigment, ovoverdin[4]. A lobster, the eggs of which were 'let down' in late September 1949, was kept at the Marine Biological Station, Port Erin, Isle of Man, and batches of eggs were examined for their astaxanthin content at regular intervals from early December 1949 until hatching began early in June 1950. The method for determining astaxanthin has already been described[3]. The results obtained are recorded in the accompanying table ; it is immediately apparent from this that no astaxanthin is utilized during embryonic development of lobster eggs, and that lobsters fall into line with trout and salmon and differ from locusts. In this respect, the constancy of the values obtained throughout the experiment is in itself remarkable ; further, the mean astaxanthin content of eggs from another lobster was 2·38 µgm./egg.

ASTAXANTHIN CONTENT OF LOBSTER EGGS TAKEN AT DIFFERENT STAGES OF DEVELOPMENT FROM THE SAME FEMALE. EGGS 'LET DOWN' LATE SEPTEMBER 1949

Date of examination	Astaxanthin content per egg (µgm.)			
	Values for individual batches of 25 eggs			Mean value
16.12.49	2·34,	2·61,	2·35	2·43
3. 1.50	2·34,	2·39,	2·42	2·38
19. 1.50	2·51,	2·35,	2·45	2·44
10. 2.50	2·32,	2·27,	2·67	2·42
24. 2.50	2·27,	2·30,	2·36	2·33
13. 3.50	2·46,	2·38,	2·24	2·36
28. 3.50	2·27,	2·30,	2·36	2·31
28. 4.50	2·26,	2·47		2·37
2. 6.50	2·32			2·32
2. 6.50	hatched but unfed larvæ (2·39)			2·39

In spite of this demonstration that, in lobsters, carotenoids appear to have no major function in embryonic development, it should be emphasized that they may be of importance earlier in the life-cycle, for Hartmann et al.[5] have claimed that astaxanthin is a fertilization hormone in trout. Further, the fact that in lobsters the pigment is rendered water-soluble by attachment to protein justifies the assumption of a function of some type. With regard to ovoverdin, it was noted during this investigation that it persisted as such throughout the development period until just before hatching, then the protein complex was disrupted and the free red astaxanthin liberated. The exact time of this change could not be determined ; but it certainly did not occur more than two weeks before hatching.

I wish to thank Mr. J. R. Bruce and his assistants for keeping the lobster at Port Erin and supplying regular samples of eggs.

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