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RESEARCH ABSTRACTS FOR 1935

The following abstracts summarize the results of investigations carried on at the laboratory during the summer of 1935. The reports have been edited only to insure uniformity of arrangement, and are otherwise in the form contributed by the authors. (For bibliographic reference it is recommended that the following form be used: *"Bull. Mt. Desert Is. Biol. Lab., 1936, p—."*)

ON THE DEARTH OF CRAGO BOREAS AT SALSBURY COVE DURING 1934*

BENJAMIN KROPP, *Boston, Massachusetts*

During the months of July and August, 1932, the small decapod crustacean, *Crago (= Crangon) boreas,* was present in large numbers in all of the shallow coves on the south side of Frenchman's Bay, west of the laboratory. They were always encountered in quantity on sandy, shelly and gravelly bottoms, especially in localities where *Fucus* or other water plants were present. Dredging from low water line to depths of about 15 feet invariably brought up 50 or more in a single haul together with large numbers of the sea urchin *Strongylocentrotus.* In some places where the bottom could be seen the latter were numerous enough to give the appearance of dense mats. These same localities yielded extraordinarily few specimens of *Crago* during August 1934. A whole afternoon's dredging often produced as few as 25 adults. Most of the adult females obtained were egg-bearing. A few such females were taken during 1932 but, although no complete records of their abundance were kept, no more than 10 to 20 egg-bearing females were encountered all that summer. Very striking were the large numbers of very young larvae—an-

* These observations were made during the summer of 1934.

other condition not encountered in 1932. Since this crustacean breeds normally from March to June the above conditions were unexpected. Together with this the number of *Strongylocentrotus* to be seen on the bottom was smaller, and relatively few were brought up by the dredge.

The unusually severe winter of 1933-34 may furnish a possible explanation of these conditions. According to winter residents of the region, during at least two months of the winter all of the coves were solidly frozen and in some places the ice extended 20 to 30 feet into Frenchman's Bay. Since *Crago boreas* is not normally a deep water form it would seem that enormous numbers must have been killed off in this way. If we regard the early breeding individuals as having been thus largely eliminated and the late spring and summer breeders as delayed, we have a possible explanation of the conditions found.

SOME PHYSIOLOGICAL EFFECTS OF THE CRUSTACEAN EYE STALK HORMONE*

BENJAMIN KROPP, *Boston, Massachusetts*

Heretofore, two physiological effects of the crustacean eye stalk hormone have been demonstrable—(1) the chromatophore effect on vertebrates and invertebrates and (2) its growth affecting action on growing coleoptiles and root tips. The study herewith reported of its effects on vertebrate heart muscle was part of a series designed to determine the range of its physiological action.

The heart of the sculpin *Myoxocephalus octodecimspinosus,* was exposed at 16°C, at which temperature in the well-aerated animal the heart will maintain its beat for at least 2 hours without violent fluctuations in rate. On injecting into the auricle of such a preparation 0.3 cc of a sea water extract of the eye stalks of *Crago* (concentration 1 eye stalk = 0.01 cc of extract) the immediate effect was cessation of the beat of the auricle for 2 minutes, after which the auricular beat gradually returned and was maintained at its original rate. The rate of beat of the sinus and ventricle was decreased by about one-half and their original rates were resumed gradually at the end of a 2 minute period. There was no lasting effect upon the rate of beat of any portion of the heart. Control experiments involving puncturing the auricle, the injection of sea water, etc., showed adequately that the observed effects were attributable to the hormone solution.

A preparation of the excised heart of *Myoxocephalus* was found to beat in sea water at 16°C with frequency and amplitude of beat unimpaired for about one-half hour. The beating of such a preparation was instantaneously extinguished by the injection of 0.3 cc of an eye stalk extract as dilute as 1 eye stalk = 0.2 cc of extract. The same quantity of a more dilute solution (i.e., 1 eye stalk = 0.3 cc, and 1 eye stalk = 0.4 cc) resulted in disorganization of the beat and

*This work was done during the summer of 1934.