

1963 #1

BROMINATION OF PHTHALEIN DYES BY THE UTERUS OF THE DOGFISH, Squalus acanthias

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The observations that phenol red is brominated by the pregnant dogfish uterus in vivo were extended and chlorophenol red, metacresol purple, and fluorescein were also found to be brominated. Some evidence was obtained that p-hydroxybenzoic acid and phenol were similarly brominated. After intrauterine administration of fluorescein, 4,5 dibromo-, 2,4,5-tribromo-, and 2,4,7-tribromofluorescein could be recovered in 24 hours and after 48 hours only eosin could be recovered, thus implicating a stepwise bromination. In vivo bromination could be inhibited by administering 10 mM of sodium azide with the dye. The bromine was derived from an extraneous source but sea water could be replaced with a solution of NaBr. Bromination did not occur in non-gravid dogfish. Bromination was also demonstrated by in vitro incubation, the pH optimum was found to be 7.4 and the site of bromination seemed to be the epithelium of the uterus.

1963 #2

OCCURRENCE OF THE CILIATE URCEOLARIA (Peritrichida, Mobilina) ON THE SEA URCHIN Strongylocentrotus droebachiensis

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Examination of the literature shows that epizoic species of Urceolaria have been reported from various invertebrates, including flatworms, mollusks and polychaetes, but not from echinoids. In 1963 urceolarias were found in abundance on S. droebachiensis at Mt. Desert Island. They occurred chiefly on the short spines (length, 2-4 mm.) and on the stalks of the triphyllous pedicellariae of two regions of the urchin test, viz., the flattened circumoral region and the region surrounding the periproct. Specimens were found in smaller numbers on the long spines (length, 5-10 mm.) of these regions, but only on the basal third of each or at most the half. (Spine-lengths refer to urchins having tests 40-60 mm. in diameter.) They occurred very sparingly on the spines and pedicellariae of the equator of the test. In general, the number of specimens per faunated short spine varied from 5 to 40 or more (maximum observed, 95), and on some urchins 50% of the short spines had ciliates. Triphyllous pedicellariae usually had 5-20 apiece.

With reference to incidence of the ciliate, examinations were made of 187 urchins from three localities: Laboratory Point, Long Ledge and Googin's Ledge. Of these urchins, 157 (84%) were positive, suggesting that the ciliate is of common occurrence on the host. Study of the gastrotriches indicated that the food is entirely bacterial, and thus the ciliate appears to be a harmless epizoon. Some characteristic features are its low cylindrical form and H-shaped macronucleus,

and the presence of about 25 prominent cirri around the margin of the adhesive disc. A description of the urceolarian, which is regarded as a new species, will appear elsewhere.

1963 #3

FAUNAL SURVEY

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A faunal survey of the marine animals of the Mt. Desert region was first carried out under the sponsorship of W. P. Proctor (Biological Survey of the Mt. Desert Region, part 5; Wistar Press 1933). The mollusks had been treated earlier by D. Blaney (List of Shell-Bearing Mollusca of Frenchman's Bay, Maine; Proc. Bost. Soc. Nat. Hist. (1940) vol. 32:23-42). Since then much additional and new information has been regularly added by the research staff of the laboratory, some of which has been subsequently reported in the Bulletin. In view of the need for a more thorough knowledge of the availability of animals for embryological, physiological and biochemical research, the staff of the laboratory has in recent years been concerned with a gradual inventory of the composition of the local fauna, its abundance and its collectibility. This survey is now mostly completed.

The sheltered waters around the laboratory support some scientifically useful and easily collected material. This material is listed below and marked (§); some useful material from the outer Frenchmans Bay and from the Blue Hill Bay is also included and marked (*).

EMBRYOLOGY: §Hydractinia echinate, §Cerebratulus fuscus, §Crepidula fornicata, §Littorina littorea, §Dendronotus frondosus, §Mytilus edulis, §Spirorbis borealis, §Idothea baltica, §Marinogammarus sp., §Asterias vulgaris, §Asterias forbesi, §Echinarachnius parma, §Fundulus heteroclitus.

PHYSIOLOGY and BIOCHEMISTRY: §Clava leptostyla, §Campanularia flexuosa, §Sertularia pumila, §Lineus sp., §Trachydermon ruber, §Acmaea testudinalis, §Littorina littorea, §Buccinum undatum, §Thais lapillus, §Ensis directus, §Mytilus edulis, §Modiolus modiolus, §Mya arenaria, §Pecten magellanicus (§Anodonta cataracta, §Elliptio complanatus - freshwater forms from lakes on the island), §Nereis virens, §Glycera dibranchiata, §Nephtys caeca, §Polydora ciliata, §Amphitrite brunnea, §Balanus balanoides, §Homarus americanus, §Crago septemspinus, §Pagurus bernhardus v. acadianus, §Cancer borealis, §Asterias vulgaris and forbesi, §Ophiopholis aculeata, §Strongylocentrotus droebachiensis, §Echinarachnius parma, §Cucumaria frondosa, §Chirodota laevis, §Halocynthia pyriformis, §Molgula siphonalis, §Myxine glutinosa, §Squalus acanthias, §Lophius piscatorius, §Anguilla rostrata (Beaver Pd.), §Ictalurus nebulosus (Beaver Pd.).

The bottom of the inner Frenchmans Bay, and especially the Eastern Bay in the laboratory vicinity seems to have changed considerably since BLANEY's and PROCTOR's surveys. Nucula and Yoldia species, as well as polychaetes and some other forms were reported by them as extremely abundant in all sampled soft bottoms, whereas they now are remarkably scarce. The reason may be sought in the increased building activity around the bay, with associated increase in summer population and water pollution. These forms now have to be collected from other shores of the island and brought by truck to the laboratory.