

XIII.

BACTERIAL DESTRUCTION OF COPEPODS OCCURRING IN MARINE PLANKTON.

During the summer of 1916 I was investigating the bacteriological content of "Swelled Canned Fish" for the Biological Board of Canada at the Marine Station, St. Andrews, N.B.

While there Dr. Arthur Willey (Professor of Zoology, McGill University) called my attention to the condition of some of the copepods—(*Calanus finmarchicus*)—upon which he was conducting researches. Under the microscope it was seen that many parts of the tissue of copepods which had died in culture flasks were completely destroyed by masses of what appeared to be bacteria. It was particularly noticed that the axial cavity in the first antennae was entirely occupied by a dense column of writhing organisms. Tubes of nutrient broth were inoculated direct from the copepods and after two days' incubation at room temperature a definite clouding of the medium was noted.

At the request and on the suggestion of Dr. Willey I have proceeded with the examination of the cultures secured, and have obtained in pure culture the organisms concerned. Three specific strains of bacteria have been isolated.

Inasmuch as the work may have some practical significance in relation to the general subject of marine biology, and is of scientific interest, this report of the detailed studies of these organisms has been prepared.

MEDIA EMPLOYED.

I began by using various media prepared from fish concoctions in addition to the ordinary laboratory media. The latter, however, proved to be more satisfactory in every way and I have therefore confined myself to their use entirely.

Beef Peptone Agar.—Standard methods¹—Beef extract being substituted for meat.

Beef Peptone Gelatine.—Standard methods.¹

Glucose Agar.—1% glucose added to agar prepared as above, immediately before tubing.

Sodium Indigo Sulphate Agar.—3 per cent. sodium indigo sulphate with 1 per cent. glucose added to neutral agar, tubed and sterilized in flowing stream for three successive days.

Tochtermann's Serum Agar.—² For digestion test.

Löffler's Blood Serum.—³ " " "

Aesculin Agar.⁴—For specific reaction of organisms of the colon-aerogenes group. Loops of a broth culture spread on plates.

Neutral Red Bile Salt Agar.⁵—Ditto, ditto.

Bouillon for Voges-Proskauer reaction.⁶—

Bouillon for the Methyl Red Reaction.⁷—

Solution for reduction of Nitrates to Nitrites.—Giltay's synthetic solution was used, and also a peptone potassium-nitrate solution.