"The dead fish was a specimen of *Labea* sp., a plant feeder. The gills were almost white.

"The dying fish was a specimen of *Synodontis schall*, a carnivorous bottom feeder. It was severely bloated.

"The sudden appearance of a large number of dead fish of different species at the same time points to poisoning as the cause of death, and not to disease."

The two fish were then examined for the presence of DDT in different organs using the method of Schechter *et al.*[1] after a preliminary separation of the DDT from the fatty matter using the method of Schechter *et al.*[2]. The following results were obtained :

| Fish | Organ | Weight taken (gm.) | Weight DDT found (μgm.) | DDT in organ (p.p.m.) |
|---|---|---|---|---|
| *Labea* sp. | gills | 4·32 | 4 | 0·9 |
| | viscera | 14·26 | 36 | 2·5 |
| | flesh | 12·33 | nil | nil |
| *Synodontis schall* | gills | 7·04 | 19 | 2·7 |
| | viscera | 26·29 | 2,080 | 79 |
| | fatty deposit | 1·37 | 87 | 64 |

These results lend some support to previous work showing that fish are highly sensitive to DDT, and that non-fatty animals are more sensitive than fatty animals (summary in Hinton[3]). The *Labea* was found dead some eight hours after spraying, whereas the *Synodontis* survived thirty-six hours.

However, the possible effect of the surface-active agent should not be overlooked.

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## Occurrence of Paracolon Bacteria in a Tropical Marine Environment and their Classification

Late or non-lactose fermenting bacteria are of wide interest in the clinical field because of their association with gastroenteritis and urinary infections. Because they form colourless or white colonies on coliform differential media, they are usually overlooked during the isolation of coliforms. Clemesha[1] was probably the first to recognize the importance of these organisms in India, when he stated that "a class of organisms which ferment glucose but not lactose is not only exceedingly common in water . . . but the significance of these bacteria is of great importance to the water analyst". Topley and Wilson[2] also felt that "there seems no doubt that they are a more common constituent of normal intestinal flora under tropical than under temperate conditions". In India these 'Paracolon' bacteria are misclassified in the genus *Escherichia* or *Aerobacter* despite the fact that lactose fermentation is a fundamental characteristic of the latter organisms. Topley and Wilson[2] defined 'Paracolons' as those which do not ferment lactose or ferment it slowly and have the 'IMViC' reaction + + − −. Stuart *et al.*[3] suggest the term 'Paracolon' for papillæ-forming anaerogenic and slow lactose-fermenting *Escherichia*-like organisms associated with gastro-enteritis. Breed *et al.*[4] have accorded generic rank to *Paracolobactrum*, including them as an appendix to the tribe Escherichiae.

While working on the coliform types in green mussels[5], we isolated some 'paracolons' also. Two are similar to *Paracolobactrum aerogenoides*, whereas eight others belonged to *Paracolobactrum coliformae*. Three of these were malonate-positive but differed from those of Schaub[6]. All the cultures fermented glucose and all but one fermented sucrose. Dulcitol was not fermented by any of them whereas a few fermented adonitol. Gelatin liquefaction was not common, neither did many produce hydrogen sulphide. Lactose fermentation was mostly negative and very delayed if positive. All the *Escherichia*-like paracolons produced indole, in agreement with the findings of Kligler[7] and Ferguson and Wheeler[8]. Though *MR*-positive coliforms ferment glycerol, only two of the *Paracolobactrum coliformae* fermented glycerol. A few cultures were weakly urease positive in Christensen's medium but none in Rustigian and Stuart's, thus excluding their relationship to *Proteus*. Our cultures were all peritrichous when very young (5 hr. old) but they showed 'degenerate peritrichous' flagella when 18 hr. old.

Breed (personal communication) would include polar flagellate glucose-fermenting (aerogenic) but non-lactose fermenting organisms in the new genus *Aeromonas* Kluyver and Van Niel. The culture described by us as *Paracolobactrum coliformae* var. *marinum*[9] was found later to be monotrichous and would belong to *Aeromonas* but for the fact it is *MR*-positive. Flagellation is an important diagnostic characteristic in distinguishing the Paracolon-Aerobacter from *Aeromonas*. The failure of some coliform bacteriologists to determine the type of flagellation has led to misclassification of *Aeromonas* as *Paracolobactrum*, as emphasized by Breed. Sen and Dutt[10], describing a lactose anaerogenic but glucose aerogenic organism, identified it as *Aerobacter cloaceae*, though it should properly be classified as *Paracolobactrum aerogenoides* (or as *Aeromonas*, if flagellated at the poles). In view of the reported role of paracolons in the etiology of gastric infections, and that of *Aeromonas* in causing diseases of cold-blooded animals, more attention should be paid to their proper classification.

Detailed descriptions of the paracolon cultures will be published elsewhere. We thank Dr. Robert S. Breed for useful discussion and for a preprint of the section on the genus *Aeromonas* prepared for the 7th edition of "Bergey's Manual".

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