## Parasitic Infection of Porcupine Fish

BETWEEN the first week in October and the middle of November last, thousands of dead porcupine fish, *Diodon maculatus*, were cast up on the south and west coasts of Ceylon. These dead fish were observed near Galle early in October; by the second week in November they were to be found in large numbers along a stretch of about two hundred miles of sea-coast from Hambantota to Chilaw. The fact that they were first found on the shores of the south-west corner of the island and later along the western coast seems to point to their having been brought in from the deeper waters to the south of the Gulf of Manaar, as their distribution corresponds with the prevailing direction of currents in October and in November.

I examined a few of these fish collected at random. All of them were adults of about the same size and all were infested with a parasitic copepod which may be *Pennella sagitta*, the common parasite of *Diodon*. I cannot be definite with regard to this identification on account of lack of literature here and as this copepod differs in some respects from the description of *Pennella sagitta* taken from an *Antennarius marmoratus*[1]—the only description available. Some of the fish had but a single parasite, while others carried two or even three of them. In addition, some had chalimus stages of a *Caligus* sp. on them.

The cause of the death of this fish in such large numbers is difficult to ascertain. Sudden alterations in the conditions of its habitat due to submarine disturbances can scarcely explain it. Such disturbances would, no doubt, have affected other organisms living in the same habitat; but of this there has been no evidence whatever. Could a plague of this *Pennella* have caused the destruction of such a multitude of these fish? *P. sagitta* is known as a parasite of several species of *Diodon* and *Antennarius* and the presence of one or two individuals does not, in ordinary circumstances, bring about the immediate death of the host. Many of them on the same fish would endanger its life, but in this instance they were not present in such numbers as to justify the conclusion that they were solely responsible for this slaughter.

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[1] Leigh-Sharpe, W. H., "The Genus *Pennella* as represented by the Collection in the British Museum", *Parasitology*, **20**; 1928.

## Blood Composition in Relation to Milk Secretion

MANY attempts have been made to determine the changes in composition of the blood that occur in its passage through the mammary gland, with the view of elucidating the mode of secretion of milk. Earlier workers in the field (Meigs[1] 1922) thought that by examining blood taken from the jugular vein they were studying a fluid of similar composition to arterial blood, and undoubtedly the former can be obtained far more easily than the latter in the case of the bovine. More recently, Blackwood and Stirling[2] (1932) have suggested that jugular venous blood is more concentrated than arterial, and they attribute this concentration to removal of water by the salivary glands.

Considering the small magnitude of the differences in blood composition which are under investigation in these studies, we feel that attention should be directed to the numerous grave sources of error which may be involved in obtaining blood samples, as in no instance reported in the literature have all of these been taken into account. These errors are fully discussed by Peters and Van Slyke[3] (1931) and the following examples need only to be mentioned, namely, changes in plasma concentration arising from venous stasis, such as may result from compression of the vein, use of oxalate as anticoagulant, undue exercise on the part of the animal or loss of carbon dioxide from the blood sample. In regard to the first point, we have observed such evidence of stasis as œdema in taking jugular samples, and it is a common practice to use means of compression in this procedure. We are attempting to eliminate these sources of error from the work we have in progress, and hope to publish more detailed findings in the near future.

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[1] Meigs, E. B., *Physiol. Rev.*, **2**, 204; 1922.
[2] Blackwood, J. H., and Stirling, J. D., *Biochem. J.*, **26**, 357; 1932.
[3] Peters, J. P., and Van Slyke, D. D., "Quantitative Clinical Chemistry", Vol. 1. (Baillière, Tindall and Cox, 1931.)

## Catalytic Hydrogen Replacement and the Nature of Over-voltage

DR. J. A. V. BUTLER has criticised our remark that the influence of the composition of the liquid phase on the catalysed reaction of hydrogen and water seems to prove that the rate-determining factor is the ionisation of the adsorbed hydrogen and not the preliminary dissociation of hydrogen into adsorbed atoms.[1] Butler suggests that changes of the catalyst such as coagulation, may explain our observations. Our communication as it stands is certainly open to this objection. We should have added, that in our experiment the greatest care has been taken to meet it, by ascertaining that all changes caused by the composition of the liquid phase are completely reversible. Twenty measurements were made on an identical sample of platinum black, all consistent with one another. Our platinum black was a quickly settling powder; it was shaken 15–20 times per second with an amplitude of 4–5 cm.

In these circumstances a structural change of the platinum black appeared to be an improbable explanation for which we could find no foundation in colloid chemistry. Our recent observations on the activation energy of the reaction, which will be soon reported, have confirmed our assumption.

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[1] NATURE, 133, Jan. 6, 1934.