

Parliament are seldom confined to that part which it was designed to affect: it is bound to have its repercussions for good or for harm in all parts of society. It would be in tracing these ulterior effects where the skill of the investigator would perhaps be most taxed, since they call for knowledge of, and insight into, social structures and functions which few seem to possess.

I may add that Herbert Spencer's "Descriptive Sociology" (recently completed, I believe) is a work designed to supply the sociologist with facts concerning societies at large which should be useful in formulating the first principles of the science.

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Function of the Labral Glands in *Chirocephalus*

THE possible connexion of the labral glands with the feeding process in *Chirocephalus* has aroused considerable controversy (see Cannon¹). Current work on the function of the numerous body glands in this animal leads us to the conclusion that these have the same function as the tegumental glands of the Decapoda (Yonge²), that is, the formation of the outer, cuticular portion, of the integument. The labral glands have essentially the same structure as the body glands and we have increasing evidence that they have the same function. We are therefore interested in the claim recently made by Cannon¹ that he has identified the secretion of the labral glands. He has directed attention to the presence in sections of an amorphous mass on either side of the labrum, over the ventral food groove and also throughout the gut, which stains with anilin blue. A very detailed study of the arrangement of this has led him to the conclusion that this must all be formed by the labral glands.

We find a number of *a priori* reasons for opposing this.

(1) The very great amount of this staining mass compared with the very small size of the glands, added to the fact that it must be poured out continuously because it is passed into the gut which, apart from the food, it fills.

(2) The difficulty of reconciling the presence of the mass outside, which Cannon claims is semi-coagulated, with the rapid movement of the appendages.

(3) The fact that multicellular glands present in the labral region in all 'Malacostraca' are certainly tegumental glands producing cuticle the presence of which is equally vital to all Crustacea.

(4) Where there is definite evidence as to the nature of the secretion of the unicellular dermal glands of the 'Entomostraca', for example, cement glands of Cirripedes, uterine glands of *Chirocephalus* (Yonge³), this is of the same nature as the secretion of the multicellular glands of the 'Malacostraca', for example, tegumental glands of *Homarus* (Yonge²), cement glands of *Homarus* (Yonge³), glands in statocyst of *Homarus* (Lang and Yonge⁴), nest-forming glands of *Amphithoe* (unpublished work), namely a substance of low surface tension which sets as a *hard cement* on contact with water. All the unicellular glands of the 'Entomostraca', including the labral glands, have essentially the same structure.

We have an alternative explanation as to the origin of the mass described by Cannon. This was suggested

by the fact that antiperistalsis is of normal occurrence in the Crustacea. A *Chirocephalus* was kept overnight in a suspension of carmine. The gut was then red throughout and the animal was transferred to several changes of fresh water until no trace of carmine remained outside the body. It was then fixed in Bouin and observed at the same time under the binocular microscope. A series of antiperistaltic waves of contraction passed along the gut and about half the contents of the gut were regurgitated passing out of the mouth as a semi-coagulated mass which flowed forward on either side of the labrum and backward down the ventral food groove. The final appearance is indicated in Fig. 1.

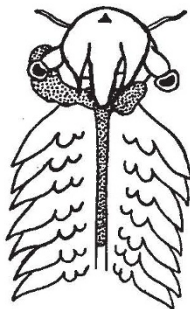


FIG. 1. Ventral view of the anterior portion of *Chirocephalus* after feeding with carmine and fixation. Regurgitated mass stippled.

Examination of sections of this animal revealed no essential difference between the distribution of this regurgitated mass and of the material described by Cannon and shown in the plate which illustrates his paper. The larger particles of carmine were the last to be extruded and occupied the position of the food, as described by Cannon, the other material, coagulated gut secretion with minute particles of carmine which gave it colour in the mass, spreading out forward on either side of the labrum and also in and below the food groove posteriorly.

We feel justified in claiming that the association of the labral glands with feeding has not been conclusively demonstrated. Prof. Cannon, with whom one of us (C.M.Y.) has had a very pleasant correspondence on this matter, is not entirely convinced by our arguments or experiments. One reason for publishing this letter is the hope that it may induce some third party, not previously committed to a belief in the secretion of the labral glands as either concerned with feeding or with the formation of the cuticle, to undertake a further study of the origin of this amorphous mass.

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¹ Cannon, *Proc. Roy. Soc.*, B, 117, 455; 1935.

² Yonge, *Proc. Roy. Soc.*, B, 111, 298; 1932.

³ Yonge, *NATURE*, 136, 67; 1935.

⁴ Lang and Yonge, *J. Mar. Biol. Assoc.*, 20, 333; 1935.

Multiplanar Cyclohexane Rings

WITH reference to the letter of Dr. Quadrat-i-Khuda in *NATURE* of August 24, we wish to state that in this laboratory, the synthesis of the 1-carboxy-4-methylcyclohexane-1-acetic acids from the dicyano ester prepared from 4-methylcyclohexanone by Higson and Thorpe's method, led only to a pair of isomerides melting at 137° and 173° respectively. These acids proved identical with the acids previously obtained by oxidation of the isomeric α -keto-4-methylcyclohexane-1:1-diacetic acids with hydrogen peroxide.

Since the remaining two isomerides described by Dr. Quadrat-i-Khuda were at no time encountered in