and the range of their validity established by deductive reasoning. As this is the main point at issue, I shall not endeavour to answer Drs. Baker and Sanders point by point, but shall restrict myself to illustrating the difference in our points of view from three of their points, one of which is a false deduction; the others illustrate the weakness of induction.

1. Drs. Baker and Sanders are strongly tempted to deduce that all regions absorbing strongly in the vicinity of 2675 A. must contain desoxypentose nucleic acid. This is not the only possible deduction. Absorption at 2675 A. is a characteristic of purine-pyrimidine and other groups, so that many compounds other than nucleic acid may absorb in this region. Thus a possible alternative cause of absorption in this region would be the presence of a protein containing purine-pyrimidine groups. Between this and nucleic acid there is a profound difference. To proceed with their argument on this matter, the principle of 'Occam's razor' is invoked. But this principle cannot be used to decide which of two alternatives is true. The correct use of the principle is in deciding which alternative appears the more sensible working hypothesis to adopt. That Feulgen's reaction indicates the site of desoxyribose nucleic acid seems to me to be a very sound working hypothesis. But let us not elevate this hypothesis to the plane of fact without conclusive (and this at the moment means new) evidence.

2. Apropos of my point that a monolayer of protein would protect nucleic acid from the action of nuclease, these authors remark, "We question the existence of such monolayers in the fixed tissues". But it is not sufficient to question their existence. The facts of Nature are not affected by questioning. What is established is that monolayers of protein exist in cells, and no one who has had practical experience in studying these monolayers can fail to be impressed by the mechanical strength they may exhibit[1,2]. What is necessary is investigation of the extent to which protective action against enzymes is in fact provided by monolayers and thin polymolecular layers.

3. Consider one of Drs. Baker and Sanders' final remarks: "We suggest that any change of position, particularly in the case of large molecules, may be an affair of A. rather than of μ". How very much simpler cytochemistry would be if we were certain this were true! And how difficult it is to establish this for any particular molecular species! But, as my teacher, N. K. Adam, once remarked to me (with due cause), that a task is difficult does not make its performance any the less essential.

Every cytologist must appreciate the valuable contributions of Drs. Baker and Sanders to cytology. I am most appreciative of the interest they and their distinguished colleagues have taken in my views, and regret that I had not made the main point of my article clearer to them.

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[1] Harvey, E. N., and Danielli, J. F., *Biol. Rev.*, **13**, 319 (1938).
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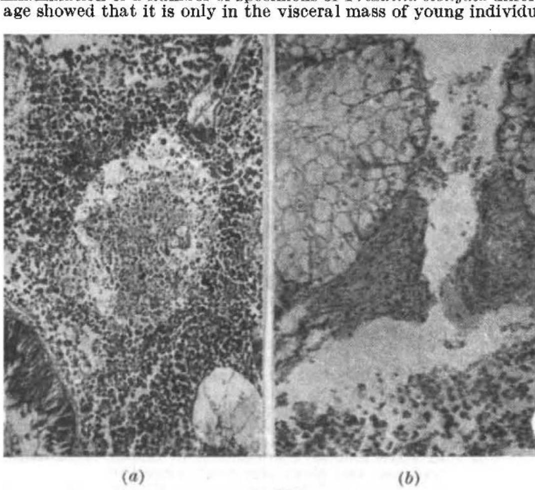
Source and Fate of the Zooxanthellæ of the Visceral Mass of *Tridacna elongata*

ZOOXANTHELLÆ have been recorded from the visceral mass of *Tridacna* by Yonge[1], who assigned to them together with those of the mantle edge a very significant role in nutrition. According to this author the zooxanthellæ are transported, by means of the blood-cells via the blood stream, from the mantle edge where they are 'farmed' to the visceral mass where they undergo phagocytic digestion.

The food and the digestive processes of the Lamellibranchiata in general and *Tridacna* in particular were referred to in my previous communication[2]. As to the blood-cells and the blood-stream being means of transportation of the zooxanthellæ from the mantle edge to the visceral mass, it must be mentioned that in both *Tridacna elongata* and *T. squamosa* the zooxanthellæ in the mantle edge were never seen within amœbocytes, nor was the blood in the heart or in the main vessels ever found containing zooxanthellæ of any description.

Examination of a number of specimens of *Tridacna elongata* differing in age showed that it is only in the visceral mass of young individuals that the zooxanthellæ actually occur. In the youngest specimen examined (2 cm. in length) the zooxanthellæ were found in the delicate layer lining the muscular wall of the visceral mass, especially in the dorsal region below the heart. In this site the zooxanthellæ are free, not engulfed, in amœbocytes, but simply exist in the meshes of this very delicate layer where they form a distinct bed reaching in some places eight zooxanthellæ in depth. In such young specimens zooxanthellæ, either free or within amœbocytes, were found also in the deeper regions of the visceral mass. Here also some zooxanthellæ were found in groups surrounded by aggregations of both ordinary and granular blood-cells. In slightly bigger specimens (5 cm.) the zooxanthellæ-bed referred to above was comparatively thin. In the same specimens, the groups of zooxanthellæ surrounded by blood-cells showed definite signs of degeneration (Fig. *a*). In still bigger specimens (10 cm.) the delicate layer lining the muscle-wall was found to be almost free of zooxanthellæ while the surrounded zooxanthellæ were reduced to a mass of unrecognizable debris.



(*a*) (*b*)
× 100.

This debris seems to be cleared out mainly through the agency of the kidneys. Paired well-defined openings (Fig. *b*) were found to put in direct communication with one another the cavity of the visceral mass and the intertubular spaces of the kidneys. Through these openings pass numerous zooxanthellæ, whole or in different stages of destruction, as well as plenty of debris-loaded blood-cells.

It is clear, therefore, that the zooxanthellæ in question are quite independent of those of the mantle edge. In all probability they started life in the visceral mass itself after a separate infection at an early stage. With the growth of the animal, the light penetrating into the visceral mass decreases, to the detriment of these zooxanthellæ, and thus the blood-cells are given a chance to clear them out of this region of the body in the way mentioned above.

The processes leading to the ultimate disappearance of the zooxanthellæ and their remains after transportation to the kidneys are still unknown.

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[1] Yonge, C. M., Great Barrier Reef Expedition Sci. Rep., **1**, No. 1 (1936).
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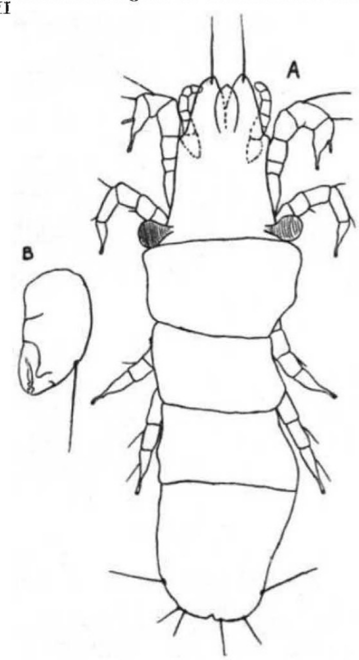
A New Acarine Parasite of Bees

WHILE conducting a survey of the ectoparasites of bees in and about Durban, Natal, during 1940, five specimens of the adult females of a remarkable new acarine were collected from two species of bees, *Apis unicolor* var. *adamsoni* Latr., and *Anthophora fallax*.

The female, which shows very definite segmentation, presents the general facies of the family Tarsonemidæ and is provided with large pseudostigmatic clavate organs as shown in the drawing, between legs I and II



Pediculochelus raulti SP. NOV.: (*a*) FEMALE IN VENTRAL VIEW; (*b*) 'PINCER' OF CHELICERA IN SIDE VIEW

The mouthparts, however, revealed the most extraordinary features. The cheliceræ instead of being very slender and needle-like, as in the Tarsonemidæ, are powerful structures consisting of two arms, the movements of which take place in a vertical direction. They resemble very powerful pincers. It is interesting to note that the upper arm of each chelicera is provided with a prominent seta as shown in the accompanying figure. The palps are not filiform but free and limb-like, being divided into six distinct segments.