Detailed results of the investigations will be presented elsewhere.

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ENTOMOLOGY

An Abnormal Form of Female Rat Flea, *Xenopsylla cheopis* Roths.

Rothschild, in 1911, separated the three species of fleas, *X. cheopis*, *X. astia* and *X. brasiliensis* of the genus *Xenopsylla* found on rats. *X. cheopis* is widely distributed in the tropics and is the principal plague flea in India. The three species (♀♀) mentioned here can be easily identified by the shape of the spermatheca. Until now, it has been reported that *X. cheopis* has a single spermatheca[1-3] (Fig. 1).

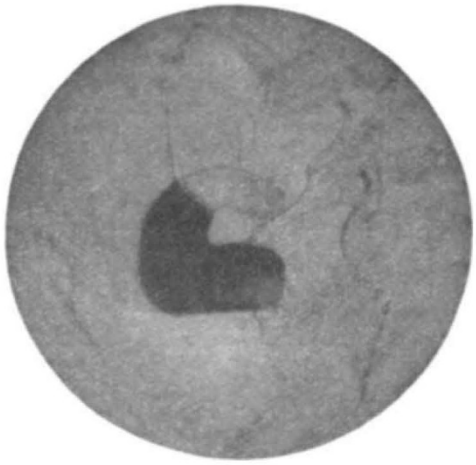

Fig. 1. (× 132)

During a routine collection of rat fleas from Delhi City for conducting insecticide susceptibility tests, a single specimen of *X. cheopis* (♀♀) was observed which has the normal typical spermatheca and another spermatheca-like structure (Fig. 2). The normal spermetheca has all the characteristics of a typical specimen: (1) the tail is much longer and at the base it is slightly wider than at the head; (2) the terminal part of the tail is longer and narrows gradually; and (3) the lower margin of the head and tail-end are at about the same level (Fig. 2, *A*). The additional spermatheca-like structure (the tail-end of which is just close to the terminal part of the tail of the typical form (Fig. 2, *B*) is pear-shaped and has a small blunt tail, but no distinct head portion.

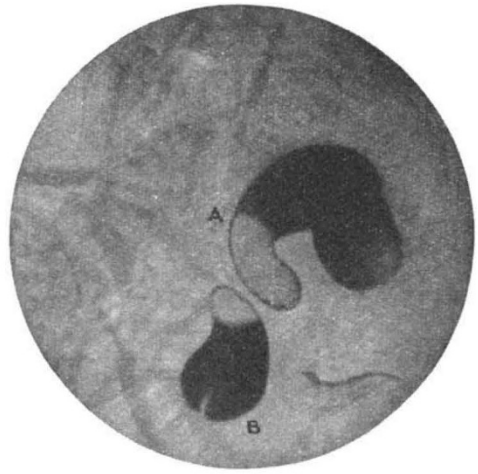

Fig. 2. (× 132)

There has been no previous record in the literature, so far as we know, of the occurrence of a similar abnormality in *X. cheopis* (♀♀).

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MICROBIOLOGY

Role of the Pentose Phosphate Pathway in *Pasteurella multocida*

It is acknowledged that in a large number of bacteria the main path for carbohydrate oxidation is the pentose phosphate cycle or other metabolic sequences not involving the Embden–Meyerhof pathway[1]. In the genus *Pasteurella*, work on *P. pestis* has shown that growing cells oxidize glucose through the pentose phosphate pathway[2], but resting cells oxidize glucose through the combined action of glycolysis and the citric acid cycle[3]. In contrast with this metabolic duality, in *P. multocida* the pentose phosphate cycle is the main path for carbohydrate oxidation, both in growing and resting cells, and in regard to the citric acid cycle its principal role seems to be to supply carbon skeletons for the synthesis of amino-acids. These conclusions are borne out by experiments carried out with *P. multocida* (strain Beaufort No. 28 from the Institut Pasteur cultured aerobically for 4 hr. (growing cells) or 24 hr. (resting cells)) at 37° and *p*H 7·2 in a medium made of meat extract, 5 gm.; yeast extract (Difco), 1 gm.; peptone, 30 gm.; sodium chloride, 5 gm.; glucose, 20 gm.; agar, 25 gm. and water up to 1 litre. Our observations can be summarized as follows.

(*a*) Resting *P. multocida* oxidizes glucose, fructose, gluconate and ribose. The Qo_2 values (μl. oxygen consumption/mgm. dried cells/hr.) of the cells incubated with 5 m*M* substrate, in m*M* phosphate buffer *p*H 7·2 at 37°, were 24 with glucose or fructose, 18 with gluconate and 12 with ribose (control, 2·3–2·6).