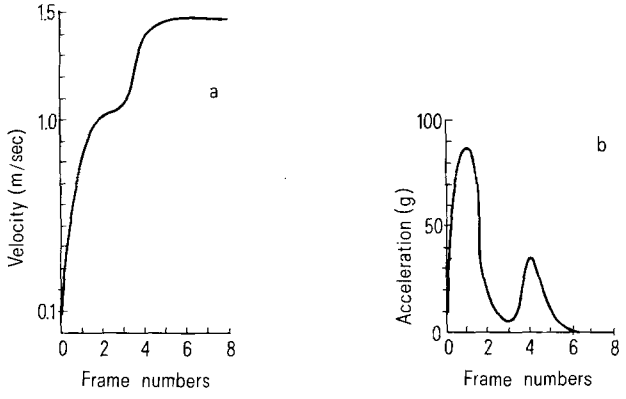

Fig. 3. *O. cavimana.* Velocity and acceleration measured from a film taken at 1000 frames/sec (figures 1 and 2). *a* Vertical velocity calculated from measured position; *b* vertical acceleration calculated from averaged velocity.

stretching the metasome yielding the greatest acceleration (880 m/sec^2), and a 2nd one by stretching the urosome adding a definitely smaller amount (360 m/sec^2). Both thrusts total 6 msec. At the end of take-off, the animal's speed is 1.48 m/sec (for comparison: click beetle 3800 m/sec^2 and 2.4 m/sec, flea 1350 m/sec^2 and 1.2 m/sec, springtail 970 m/sec^2 and 1.4 m/sec)[3-5].

After take-off, there is no means of correcting body posture or trajectory. At touchdown the animal hits the ground head or tail first on its left or right body side in a statistical distribution.

We are continuing these studies from a comparative point of view on *Orchestia, Talitrus* and related genera.

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Protein content of various developmental stages of three strains of the pink bollworm, *Pectinophora gossypiella*[1]

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Summary. Comparison of the total body protein of male and female larvae, pupae, and adults of a diapause and 2 non-diapause strains of the pink bollworm *Pectinophora gossypiella* indicated that the protein content of larvae of the diapause strains was significantly higher than of the non-diapause strain.

The pink bollworm, *Pectinophora gossypiella* has a facultative larval diapause in most cotton growing regions of the world, including the United States[3,4]. A strain of pink bollworm from the southern part of India, when tested, showed no capability to diapause, even under strong diapause-inducing conditions[5]. The concentration of total protein has been reported to increase during the induction and termination of diapause in the pink bollworm[6]. A recent study of the isozymes of diapause and non-diapause larvae has shown differences in several important enzymes[7]. To supplement an investigation on the genetics of diapause in the pink bollworm[8], a study was undertaken to see if any differences in protein content exist between the diapause and the non-diapause strains.

Materials and methods. 3 strains of the pink bollworm, a non-diapause Indian strain (IS), and 2 diapause strains from Arizona, 1 reared in the laboratory for over 40 generations (AS), and 1 newly acquired (NAS), were maintained on artificial diet under L/D 15:9 h and 25 °C[9]. Under these conditions, none of the larvae enter diapause. 10 insects of each sex from each developmental stage (mature larvae, 1-day-old pupae, and freshly emerged adults) of the 3 strains were used for total protein determination[10]. Results were subjected to 3 factorial analysis of variance.

Results and discussion. Comparison of IS and NAS larvae, both of which had been freshly obtained from the fields, indicated that the protein content was higher in the diapause type irrespective of the sex (table). The AS larvae and pupae did not show any significant differences between the sexes and the developmental stages. There was a significant reduction in the protein content of NAS pupae compared to the other 2 strains. No significant differences between the protein content of the adults of the same sex

Total body protein in males and females of 3 strains of the pink bollworm during 3 developmental stages

Strains	Sex	mg protein/g fresh body weight		
		Mature larva	Pupa	Adult
India (IS)	Male	90.4 (1.54)*	89.1 (1.57)	82.3 (1.48)
	Female	89.9 (2.08)	87.8 (1.81)	88.6 (1.03)
Arizona new (NAS)	Male	94.4 (1.52)	79.1 (0.99)	80.3 (2.20)
	Female	104.9 (1.17)	81.9 (1.62)	89.2 (2.29)
Arizona (AS)	Male	96.9 (1.96)	93.6 (1.76)	76.4 (1.77)
	Female	95.9 (2.46)	92.3 (1.36)	88.0 (1.21)

*Figures in parentheses are standard errors of the means.

from the 3 strains were observed. However, females of all the 3 strains had consistently higher protein contents.
Differences in the protein contents of diapausing and non-diapausing larvae have been reported within the same strain of pink bollworm[6,11]. Lower protein contents in diapausing larvae was explained by its probable convertion to fat[11]. Since the pink bollworm larvae do not show a uniform diapause intensity[7,8], the present comparison of a diapause and a non-diapause strain yields more meaningful results than diapause and non-diapause larvae from the same strain. The comparison of the IS and NAS strains shows that reduction of the protein concentration is not necessary for the induction of diapause.

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Evidence that the prostaglandin-like substances from *Propionibacterium acnes* are not identical with PGE_2

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Summary. The prostaglandin-like substances (PLS) isolated from *P. acnes* were investigated by reversed phase chromatography and gas chromatography-mass spectrometry. These analyses demonstrated that PLS were not identical with PGE_2, which supports a concept of PLS as a potential mediator of the inflammatory process in acne vulgaris.

The involvement of *Propionibacterium acnes* metabolites as mediators of inflammation has received increased attention during recent years. Our studies on *P. acnes* lipids, were to characterize the properties of the prostaglandin-like substances (PLS) found, as potent biologically active compound(s), in the lipid fraction of these bacteria[1]. Bioassays on gerbil colon[2] and isolated human vessels[3] revealed that PLS mimic the effects of prostaglandins of the E-type. Similarly, in vivo (hamster cheek pouch), these compounds induced a PGE-like microvascular response[4]. In addition, PLS raised cyclic AMP levels (rat ovary) approximately 2-fold[5]. On silicic acid chromatography PLS is eluted with the same solvent mixture as E-prostaglandins (i.e. with ethyl acetate:toluene 6:4, v/v). Therefore, we decided to investigate whether PGE_2 could be a constituent of PLS.
P. acnes were cultured anaerobically or aerobically for 1 week on a solid, artificial substrate. The recovery of the bacterial mass as well as the extraction procedure was reported earlier[1]. About 1 µg of (3,3,4,4-$^2H_4$)–(17,18$^3H_2$)-labelled PGE_2 was added to the resulting lipid extract. (These carrier and tracer molecules will co-chromatograph with a possible PGE_2 generated by the bacteria.) The mixture was further purified and analyzed by gas chromatography-mass spectrometry using the accelerating voltage alternator technique[6,7]. This analysis demonstrated that less than 1 ng of PGE_2 (= lower limit of safe detection) could be present in the bacterial extract. However, the biological activity of this sample corresponded to about 250 ng of PGE_2 equivalent in a gerbil colon bioassay.
In another experiment a sample (biological activity approximately 640 ng PGE_2 equivalent, gerbil colon bioassay) was subjected to reversed phase partition chromatography together with 50,000 dpm of 17,18-$^3H_2$-PGE_2 (50 mCi/µmole) as described earlier[8]. No biological activity could be detected (gerbil colon bioassay) in those fractions where tritium-labelled PGE_2 appeared.

Thus, the present work demonstrates that PLS from *P. acnes,* despite their biological resemblance to E-prostaglandins, do not contain PGE_2. This corresponds with a recent bioassay experiment on the human utero-tubal junction, where the effect of PLS was similar, although not identical with that of PGE_2[9]. Moreover, PLS possess potent chemotactic properties, which was not the case for PGE_2[10]. According to a recent suggestion[11], mediator functions may be associated with other prostaglandin-type compounds (e.g. endoperoxides), while modulator functions are associated with the end-products, i.e. prostaglandins themselves. This idea supports the concept of PLS in *P. acnes* as a potential inflammatory mediator, involved in the pathophysiology of acne vulgaris.

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