lymphocytes at 7 h p.r. These results taken together with the readings at times 6, 8 and 9 gives OER = 12.2 ± 0.8. The corresponding OER for the whole population which represents principally the cortisone sensitive fraction, is OER = 3.8 ± 0.8
These results taken together with Trowells experiments[4] give some evidence for the existence of characteristic lympnocyte subpopulations having an abnormally high OER. Since there are similarities between small lymphocytes of lymph-nodes and the cortisone-resistant fraction of thymocytes in some membrane structural and functional parameters, the high OER common for both may be related to membrane properties according to participation of membrane structures in radiobiological oxygen effect as proposed by Alper[7]. Besides the theoretical consequences, this statement may have clinical implications for the radiation therapy approach with modified oxygenation.

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Brain weight in homing and 'non-homing' pigeons

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Summary. Homing pigeons show a 5% higher brain weight than fantails and strassers. This difference is statistically significant and independent of body size. There are no allometric differences in the eye weights.

Homing ability varies among the several hundred breeds of domestic pigeons, and comparing homing pigeons with breeds that lack the homing ability should show up morphological and physiological differences which may be related to homing. We have compared the eye weight/'body size'[1] and the brain weight/'body size' relation in 2 groups of domestic pigeons using the logarithmic form of the equation of simple allometry to adjust the samples to the same body size:

$$\log y = a \log x + \log b$$

where y is organ weight, x is 'body size'[1] and a and b are calculable constants[2,3]. The first group, 'non-homing pigeons' (n = 33), consists of 2 breeds which almost lack the homing ability: fantails (n = 12) and strassers (n = 21). The second group contains only homing pigeons (n = 28) which had proved their homing ability by returning to their loft on several occasions after being released up to at least 300 miles away.
Eye weight is correlated with 'body size' in the 'non-homing' (r = 0.94) and homing (r = 0.37) pigeons (figure 1). The slope a, for the 'non-homing' breeds is 0.517 and for the homing breed 0.811. Based on a_{in}, the slope 'within' the 2 groups[3], log b is –1.269 for the 'non-homing' breeds and –1.265 for the homing breed. There is no significant difference between these values[2,3]. This suggests that a lack of homing ability in fantails and strassers is not associated with poorer vision in these breeds and supports the observation that accurate vision is not necessary for homing[4].
Brain weight and 'body size' are highly correlated in both the 'non-homing' (r = 0.92) and homing (r = 0.54) pigeons. There is no statistical difference between the slopes of the 'non-homing' (a = 0.412) and homing (a = 0.551) breeds and a_{in} = 0.418. Based on a_{in}, log b is –0.752 for the 'non-homing' pigeons and –0.730 for the homing breed; these values are statistically different ($p < 0.001$). Thus, there is an allometric difference of 5% in the brain weights between homing and 'non-homing' pigeons. Homing pigeons have relatively larger brains. If the allometric difference is calculated using body weight rather than 'body size' it is 7.5%. This higher value does not reflect the true situation since the

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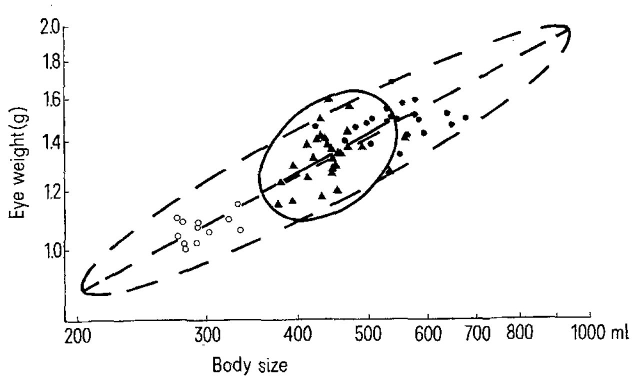

Fig. 1. Relationship between log eye weight and log 'body size' in 3 breeds of pigeons. ○, Fantails; ▲, homing pigeons; ●, strassers. The ellipse of distribution for the homing pigeons is indicated by a solide line. Since the slope of the major axis of each ellipse is not significantly different from a_{in}, a_{in} has been used for the 2 axes.

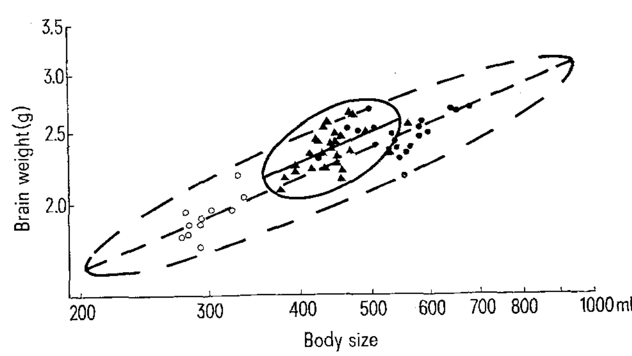

Fig. 2. Relationship between log brain weight and log 'body size' in 3 breeds of pigeons. Symbols as in figure 1. Again we have used a_{in} for the slope of the 2 axes. The axis for the homing pigeons indicates a body size independent increase in brain weight of 5% in comparison with 'non-homing' pigeons.

body weight of homing pigeons is kept down for competitive racing. For the total sample (the 3 breeds combined) the slope for the brain weight/body weight relation is 0.448 which is rather high in comparison to intraspecific brain weight/body weight slopes of 0.2–0.35 in domestic mammals[5].
The higher brain weight of the homing pigeons should not be interpreted as a sign of generally greater learning ability[6]. Preliminary learning tests with different colors and forms suggest that in order of learning ability the 3 breeds can be placed in the sequence fantails > strassers > homing pigeons[7]. The exact significance of the larger brain of the homing pigeon remains to be determined. Even if future studies fail to identify any differences between the sense organs in homing and 'non-homing' pigeons, it may be that the bigger brain of the homing pigeon enables it to make more use of incoming information.

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Bacterial lysis of cytoplasm of Cosmarium, a green alga

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Summary. The protoplast of the green alga Cosmarium is lysed by a coccoid bacterium, whereas the cell wall remains intact. Pyrenoids are more resistant to lytic action than the rest of the chloroplast. Different stages of the lysis are described.

Some species of rod-shaped myxobacteria cause rapid lysis of several blue-green algae[2,3]. The lysis of green and other algae by bacteria is also not uncommon[4]; the details of the mechanism of lysis are, however, not fully elucidated. The present paper describes various stages during lysis of cell contents of the desmid Cosmarium by a coccoid bacterium.
Material and methods. Cosmarium sp. was collected from algal cultivation ponds of Punjab Agricultural University, Ludhiana (India). The algal samples were incubated in the laboratory on a mineral medium in the light. Some lytic mechanism was suspected, since the samples turned yellow after 24-h-incubation under optimum conditions, and this was confirmed by microscopic observation. For microscopy, a loopfull of algal sample was mounted on a glass slide in glycerine and observations were made immediately.
Results and discussion. Microscopic examination revealed a lytic mechanism destroying the algal cytoplasm. Whereas the cells in different stages of lysis contained abundant bacteria, the healthy cells did not have any. On this basis

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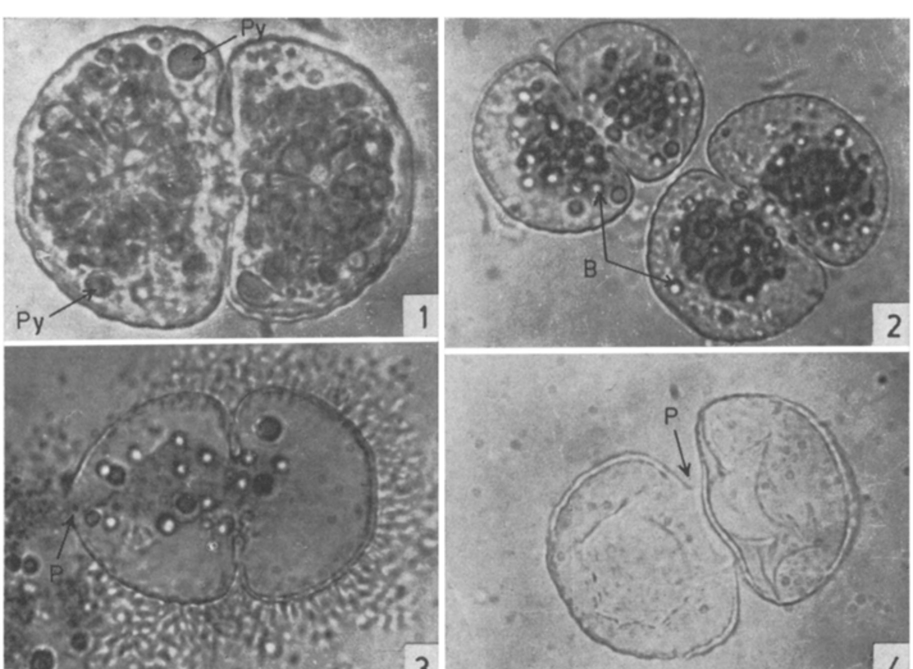

1 A healthy cell of Cosmarium. ×1500. *Py* Pyrenoids.

2 Numerous bacteria inside the cell. ×1000. The cytoplasm is in a state of disorganization. *B* Bacteria.

3 A magnified view of a punctured cell. ×1000. Note numerous bacteria attached on the wall.

4 An empty cell with a puncture (*P*). ×1000. Note that the wall is intact.