rise in serum alkaline phosphatase has been observed after oral o,p'-DDD treatment. In guinea-pigs[20], an oral dose of 300 mg/kg/day given for 12 days reduced circulating cortisol levels and killed one of the animals. In the dog[21] and in man[22] absorption of o,p'-DDD from the gastrointestinal tract has been shown to be poor. Although no absorption studies were performed in our preliminary experiment, the dramatic rise in alkaline phosphatase (over 100% increase) noticed at the end of the treatment period points towards a blood level of o,p'-DDD sufficient to have affected the adrenal cortex. However, as hepatic lesions were absent, the exact source of increased alkaline phosphatase activity must await further investigation. To summarize, the sheep (and perhaps ruminants in general) seems to be quite resistant to the cytotoxic effects of oral o,p'-DDD and, therefore, is not recommended for use for research purposes such as those outlined in the introduction. A definite judgement, however, is not possible until more data have been presented, especially about dosage, route of administration and bioavailability of the drug.

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Uptake of fat by fluorescent granular perithelial cells in cerebral cortex after administration of fat rich chow[1]

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Summary. As reported previously, fluorescent granular perithelial cells (F.G.P.) are distributed along small blood vessels, possibly postcapillary venous vessels, in the cerebral cortex; these cells take up intraventricularly administered horseradish peroxidase efficiently. In this study it is shown that lipid substances of the blood are easily incorporated into F.G.P. and stored in their cytoplasm. The quantity of fat deposits in F.G.P. varies with the age of the animal and is very marked in old rats. The administration of elastase suppresses the fat uptake and/or facilitates the fat metabolism in F.G.P.

In a previous paper[2] the authors have pointed out that the blood-brain barrier is not always as absolute as Westergaard and Brightman[3] suggested, and shows diurnal variations. The diffusion of substances through the walls of cerebral blood vessels is dependent on their molecular weight and their fat solubility. However, it is also possible that the transport of fat through the endothelium involves a vesicular component. Fluorescent granular perithelial cells (F.G.P.), discovered by the authors, are a specific type of histiocytes which are localized adjacent to small cerebral vessels, possibly postcapillary venous vessels, measuring 7-30 µm in diameter; they play an important role for the uptake, segregation and digestion of foreign material and of waste products in the central nervous system. They may thus be designated as cerebral scavenger cells. This paper is mainly concerned with the passage of nutritinal fat from the blood into the F.G.P. In addition, the effect of elastase on fat metabolism in F.G.P. was studied.

Material and methods. 16 Wistar rats, 8 months old, and 16 rats, 2.5 years old, were used; they were divided into the 2 groups A and B. Both groups were fed with a fat rich chow (Oriental Co., Tokyo, Japan), containing 2% cholesterol, soybean oil, 10% lard and 0.2% methylthiouracil for 1 day (group A) and 15 days (group B). Half of each group (4 young rats and 4 old rats) was s.c. injected with 5 mg/kg of elestase (Eisai Co., Tokyo, Japan) dissolved in 0.5 ml of physiological saline once a day; the other half received a control injection of the same volume of physiological saline. No irritations were seen at the injection sites.

The rats were sacrificed by decapitation, and the parietal region of the cerebral cortex was sliced using a blade. For light microscopy, specimens were stretched on glass slides, fixed with formaldehyde gas and stained with hematoxylin eosin (Mayer), PAS (periodic acid Schiff reaction) or sudan black B. For electron microscopy, the specimens were placed in 2.5% glutaraldehyde and 2% paraformaldehyde buffered with 0.1 M phosphate solution (pH 7.4), and then transferred into osmic tetroxide buffered with 0.1 M phosphate solution (pH 7.4). Then they were embedded in Epon 812, and cut with a Porter-Blum MT-2B ultramicrotome. The investigation was restricted to intracortical small vessels with a diameter of 10-15 µm.

Results and discussion. One day after feeding the fat rich chow (group A) the stainability of the intracellular granules in F.G.P. with eosin and PAS was somewhat diminished in both young and old rats, as compared with the controls. In the specimens stained with sudan black B, intracellular

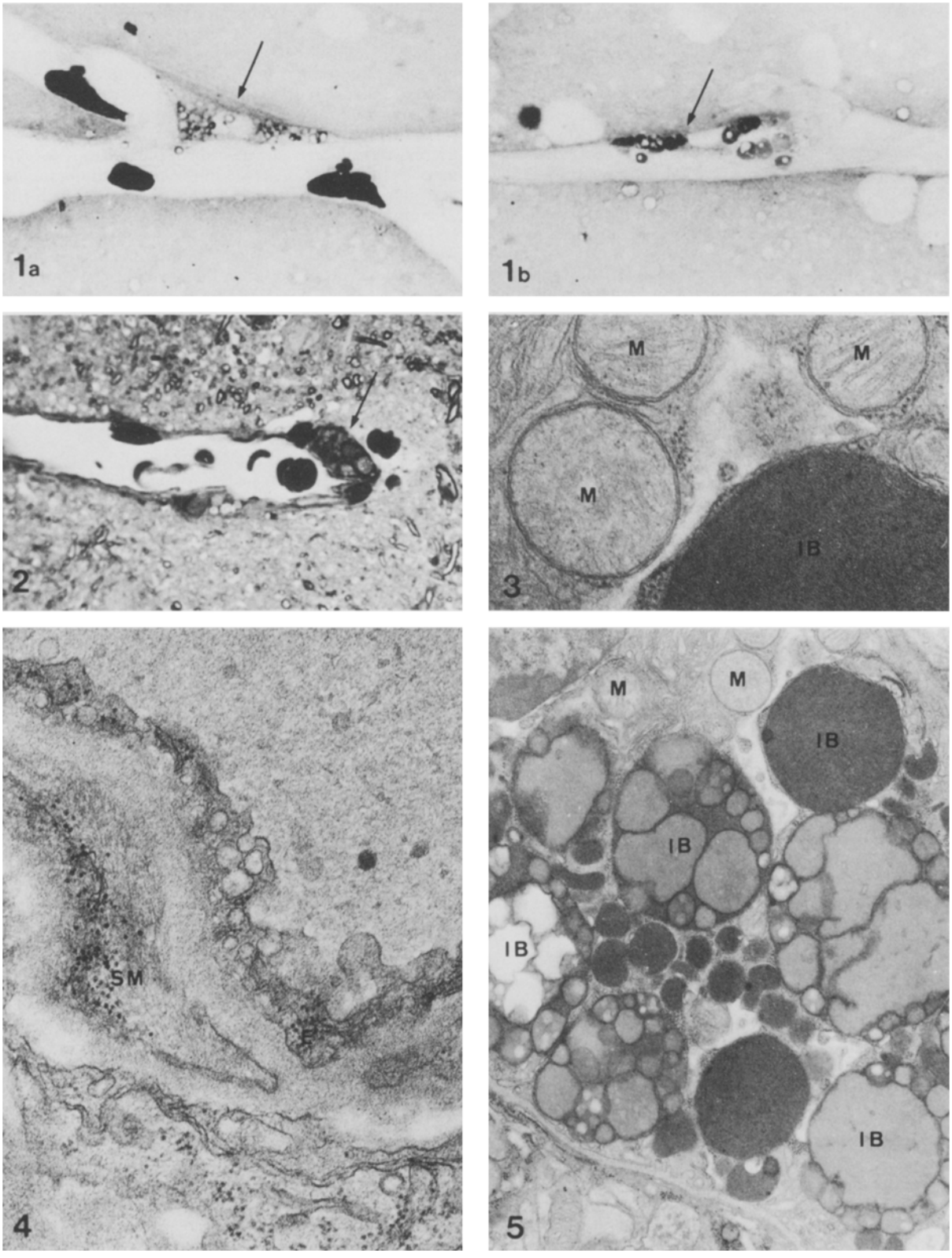

Figure 1. Microphotographs: Specimens stained with sudan black B from rats fed a fat rich chow and belonging to group A. *a* Young rat: Some dark intracellular granules are seen in the F.G.P. (arrow). Most granules look pale. *b* Old rat: Relatively large and intensively stained intracellular granules are seen in F.G.P. (arrow). × 780. Figure 2. Microphotograph: Old rat, semithin specimen stained with toluidin blue from rat fed a fat rich chow and belonging to group B. In F.G.P. vacuoles and some dark granules (arrow) are seen. × 780. Figures 3-5. Electron micrographs obtained from old rats fed a fat rich chow and belonging to group B. Figure 3. Photograph showing round and swollen mitochondria (M) in F.G.P. The cristae are not always obvious. IB, inclusion body. × 48,000. Figure 4. Many pinocytotic vesicles of different size can be recognized in the endothelial cell (E). SM, smooth muscle cell. × 43,000. Figure 5. The F.G.P. contains many dark inclusion bodies (IB) of different size and intensity. M, mitochondria. 14,500.

granules appeared intensely bluish, especially in the old rats. The stained granules were larger than those in young rats (figs 1a and 1b). At 15 days of feeding the fat rich chow (group B), the intracellular granules could hardly be stained with hematoxylin eosin, and pale vacuoles of various sizes were prominent. Granules stained with sudan black B were more apparent than in group A. However, the granules in F.G.P. of animals treated with elastase and receiving the fat rich chow, were stainable with eosin and PAS; only the peripheral regions of most granules were stained with sudan black B. The sudan black B-stained granules in F.G.P. were diminished in group B, especially in the old rats. About 30% of granules in F.G.P. were stained intensively with sudan black B in the specimens from the old rats treated with the fat rich chow, while only 10% of granules was stainable in the specimen of the rats receiving the fat rich chow and treated with elastase. Electron microscopy revealed that in rats fed a fat rich chow for 15 days (group B, figs 2 and 5), inclusion bodies with a honeycomb-like structure appeared frequently in F.G.P. The endoplasmic reticulum with ribosomes was sparse and often markedly dilated. Mitochondria looked somewhat swollen and their cristae were irregular (fig. 3). Inclusion bodies fused with each other and reached a large size. These morphological changes were typical for old rats. Similar findings were also seen in the specimens of group A, although the cytoplasmic changes were not so pronounced. All these changes are characteristic for a marked uptake and accumulation of lipid material in F.G.P.; the expansion of the endoplasmic reticulum and the swelling of the mitochondria can be regarded as an exhaustion of the cytoplasm.

From these findings it can be concluded that the quantity of lipid material in F.G.P. depends on the duration of feeding a fat rich diet and on the age of the rats. The increased fat storage in F.G.P. may reflect an increased uptake and/or a diminished digestion capacity of these cells in the old rats. However, the uptake capacity of F.G.P. for intraventricularly administered horseradish peroxidase decreases with age, as described previously[4]. Moreover, many vesicles were observed in the endothelium, indicating vesicular transport of fat through the vascular wall (fig. 4). Therefore, it appears that the specific fat uptake into endothelial cells increases significantly with advancing age. According to Banga and Baló[5], elastase is decreased in the pancreas of the elderly and of patients suffering from arteriosclerosis. Therefore, the marked deposit of fat in F.G.P. of old rats could be related to a decrease of elastase. Thus, this enzyme apparently does not only degrade elastic fibers, but also influences the metabolism of lipid material in the endothelium and in F.G.P. The precise mechanism of elastase activity in F.G.P. awaits further investigation.

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Establishment of a colony of the mosquito *Culiseta longiareolata* under laboratory conditions

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Summary. A colony of *Culiseta longiareolata* was set up in the laboratory starting with more than 700 larvae and pupae collected from an old well. Procedures for successful establishment of a colony and laboratory maintenance of this mosquito are described.

According to Kirkpatrick[1] the mosquito *Culiseta (Allotheobaldia) longiareolata* Macquart (Diptera, Culicidae) is a Mediterranean species common throughout North Africa and in the Canary Islands, Palestine, Syria, Macedonia, Italy and South and Central France. It has also been recorded from the Sudan, East Africa and Cape Province, from Transcaspia, Mesopotamia, Persia and the Punjab.

As the necessity for research has increased, the need for more efficient rearing techniques has also increased, and over the years investigators have been able to increase the efficiency of mosquito rearing[2-5]. Maintenance of a laboratory colony of *C. longiareolata* Macq. has not been previously reported. This species has been found to be amenable to laboratory colony-formation, and a colony of these mosquitoes has been maintained in the Department of Entomology, Faculty of Science, Cairo University, for 2 years. Many experiments have been performed to determine the best conditions for routine maintenance of a self-perpetuating colony of *C. longiareolata.* Details of the origins of the colony, methods for routine maintenance and observations on the biology of the immature forms are reported in the present paper.

Colony formation. The colony was established using large numbers (more than 700) of 4th instar larvae and pupae collected from an old well in Wadi El-Natroun (Beheira Governorate) about 110 km north west of Cairo, during December 1977 and January 1978. Larvae and pupae were transferred to the laboratory in glass jars along with rotted leaves and dates collected at the larval breeding sites.

Laboratory maintenance. 75 emerging adults of each sex were held in cages $30 \times 30 \times 30$ cm or in small rearing containers $9 \times 15 \times 20$ cm for successful mating (stenogamous). The cages were made with a wooden floor, the roof and 3 sides were made of wire gauze, and the wooden front was provided with a circular hole accomodated with an organdy sleeve to allow the introduction of pupae and sugar solution and the removal of deposited eggs. Each cate was provided with cotton pads soaked with 10% sugar-water solution as a source of carbohydrate for males and females. An ambient temperature of 18–22 °C was maintained, with an ambient relative humidity of 60–70%. In order to maintain the temperature below 20 °C during the summer season a climatized room was used. Attempts to control photoperiod only during the summer season were