showed that in this case also a specific degradation was not occurring.

It therefore seems that ODNA contains both acid-stable and alkali-stable residues but it is not known whether the same residues are involved in each case. In this connexion it may be noted that when thymidine-5'-phosphate was oxidized with osmium tetroxide it was necessary to treat it with alkali before the phosphate was liberated as inorganic phosphate on treatment with the Burton reagent and that in the case of deoxycytidine-5'-phosphate there was incomplete liberation of inorganic phosphate even in these conditions¹⁵.

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BIOLOGY

Odour in Mice

LABORATORY mice sometimes produce a characteristic mousy smell, which on occasion can be obtrusive and unpleasant. This smell comes from the secretion of the preputial glands in the male, and its purpose is to mark territory or establish dominance. Certain conditions will provoke this secretion, among them putting the mice into a clean cage, which has to be promptly marked by the males. Thus, paradoxically, frequent cage changing will result in a smellier mouse room than one in which cages are changed only once in 2, 3 or 4 weeks. This is perfectly compatible with health and hygiene if a suitably absorbent bedding material is used.

Recently, some surplus male mice had to be culled from our colony, and they were put temporarily into an empty, clean polypropylene mouse cage before being taken to the killing chamber. After some minutes, there was a little fighting, but, much more noticeable, a very strong smell was produced. Our colony of some thousands of mice is normally almost free of smell, but these agitated male mice quickly made the room almost intolerable.

It is suggested that if a mouse colony is unpleasantly smelly, the remedy is not to increase the frequency of cage changing, but to examine the husbandry, and correct whatever faults are undoubtedly present.

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Synergistic Effect of Two Stimulants to induce Probing in *Stomoxys calcitrans* (L.)

INVESTIGATIONS into the efficacy of mammalian skin secretions and their decomposition products, and of blood as stimulants of the probing response in blood sucking Diptera (other than mosquitoes) have produced confusing and often apparently contradictory results¹⁻⁶. Hopkins⁴ used hungry, water-sated *Stomoxys calcitrans* in tests to determine possible chemical stimulants of probing, and obtained a positive response to conditions of high relative humidity and to ammonia evolved from aqueous solutions. This response to ammonia was observed in conditions of high humidity and did not occur when ammonia was evolved from dry ammonium carbonate. Hopkins, however, states that ammonia evolved from aqueous solution retains its stimulatory effect at low humidities. Measurements of relative humidity or of ammonia concentration were not made, although calculations of ammonia concentrations based on partial pressure data were given.

In the course of a detailed study of the physical and chemical factors which control feeding behaviour in *Stomoxys calcitrans*, I have obtained results which clarify the roles of ammonia and relative humidity in the initiation of probing. Hungry, water-sated flies were subjected to air, the temperature, relative humidity and content of any olfactory stimulant of which were precisely controlled. Dry air which had been filtered through charcoal was conditioned in a large reservoir; the required ammonia concentrations were achieved by injection and evaporation of calculated quantities of 0.880 ammonia solution. The humidity was then adjusted by injection of distilled water and the temperature was stabilized by drawing the air through glass coils which were immersed in a constant temperature water bath.

With this technique I found that ammonia did not induce probing at a series of concentrations from 50 µg/l. to 2 mg/l. at 65–70 per cent relative humidity. These concentrations of ammonia also failed to elicit probing at relative humidities ranging from 25–85 per cent when the flies were conditioned to the relative humidity in question. Flies which were, however, conditioned to any level of humidity within this range, and which were then subjected to a sudden increase in relative humidity, probed in the absence of any olfactory stimulant. Adaptation to the new level of humidity was extremely rapid and the response usually disappeared completely within 30 sec.

I carried out an experiment in a constant temperature room at 25° C and 50 per cent relative humidity to determine the effect of the presence of ammonia on this response to an increase in relative humidity. Groups of forty flies which had been starved for 24 h and deprived of water for 1–3 h were subjected individually to increases in relative humidity from the ambient 50 per cent, to 65, 75, 85, 95 and 100 per cent relative humidity, both in clean air and in air containing 1.4 mg/l. of ammonia (shown in preliminary experiments to be the optimal concentration). The flies were observed for 1 min after the rise in humidity and the results are shown in Fig. 1. There is clearly a synergistic effect between the two stimuli in the induction of probing. The nature of the synergy is unknown. Association between ammonia and adsorbed water molecules may result in the stimulation of a single receptor site. Alternatively, two types of receptor may be involved, and the synergy could be a central nervous system phenomenon. Further work is required to resolve this problem.

An insect approaching the skin of a live host would be subjected to an increase in humidity and to a series of olfactory stimuli, including ammonia. The concentrations of ammonia shown to be effective in these experiments are very much higher, however, than could be expected to result from the decomposition of skin secretions on the host's surface. It is thus possible that in the presence of