pression of the metabolic activity, or to a shortage of prosthetic groups, because the inoculated animals were apparently healthy and enzymes other than histaminase, such as succino-oxidase or monoamine oxidase, showed no significant difference in their activities between the normal and the inoculated rat liver. The succino-oxidase activity was 274 and 296 μl. oxygen/100 mgm. tissue in 30 min. in the normal and the inoculated liver respectively. Monoamine oxidase was assayed with tyramine according to Creasy's method[7]. The uptake of oxygen was 237 and 220 μl./gm. tissue in 30 min. in the normal and the inoculated liver respectively. It is considered that reduced activities of histaminase may provide a clue to the explanation of histamine hypersensitivity in animals inoculated with *B. pertussis*.

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[1] Parfentjev, I. A., and Goodline, M. A., *J. Pharm. Exp. Therap.*, **92**, 411 (1948).
[2] Kind, L. S. *Bact. Rev.*, **12**, 173 (1958).
[3] Kind, L. S., and Woods, E. F., *Proc. Soc. Exp. Biol. and Med.*, **84**, 601 (1953).
[4] Fishel, C. W., *J. Infect. Dis.*, **101**, 20 (1957).
[5] Kuwajima, Y., Matsui, T., and Asano, A., *Yokohama Med. Bull.*, **6**, 375 (1955). Kuwajima, Y., Matsui, T., and Kishigami, M., *J. Hyg., Epidemiol., Microbiol. and Immunol.*, **2**, 16 (1958).
[6] Kapeller-Adler, R., *Biochim. Biophys. Acta*, **22**, 391 (1956).
[7] Creasy, N. H., *Biochem. J.*, **64**, 178 (1956).

Since the work described above was carried out we have investigated the reduced inactivation of histamine by liver and brain from mice sensitized with *B. pertussis*. Histamine was added to a homogenate of the organs. Then the amount of histamine remaining after various intervals of incubation at 37° C. was determined by extracting histamine by a modified McIntire's method[1] and using guinea pig ileum. The extract responded to atropin and antihistamines in much the same way as histamine did. The liver and brain of sensitized mice showed a statistically significant reduction in the histamine-inactivating activity over non-sensitized mice.

The failure of reproduction of a reduced inactivation of histamine in mice sensitized with *B. pertussis*, as reported by Kind and Woods, may be due to their use of a more dilute homogenate than ours and a crude mixture instead of histamine extract.

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[1] McIntire, F. C., Roth, L. W., and Shaw, J. L., *J. Biol. Chem.*, **170**, 537 (1947).

Secretion of Two Types of Saliva by an Aphid

Nearly all phytophagous Hemiptera, including aphids, secrete a salivary material which coagulates rapidly on ejection to form a 'stylet-sheath' enclosing the path of the stylets in food materials and even in agar gel[1] and liquids[2]. It has been reported[3] that some Heteroptera secrete in addition a separate watery and water-soluble saliva which is emitted and sucked back both on the surface of substrates and within them. However, opinions differ on whether jassids secrete one type of saliva from which water-soluble substances diffuse before it gels[4] or two distinct types of saliva[5]; and among the Homoptera generally, only a sheath-forming secretion has hitherto been demonstrated conclusively.

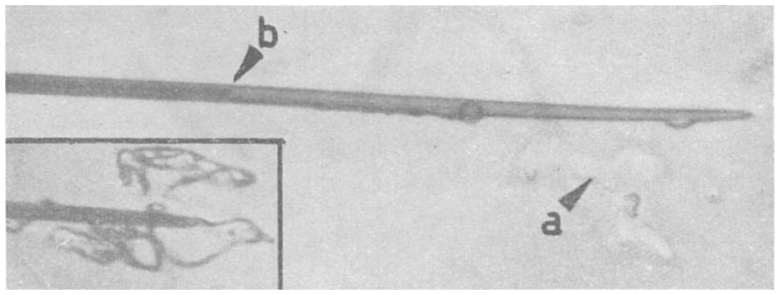

Fig. 1. Photomicrographs of the stylet bundle (with food canal uppermost) and salivary secretions of *Aphis craccivora*. (*a*) Sheath material secreted on to the underlying glass slide; (*b*) the meniscus of a watery secretion which has been discharged from the salivary canal and sucked back into the previously empty food canal. Inset, sheath material being extruded from the tip of the stylet bundle

The salivary secretions of aphids are of particular interest since they can act as vehicles for many plant viruses and may also inhibit them[6]. Due to the smallness of the insects it is difficult to determine whether, during feeding, they emit any non-coagulating saliva in addition to the sheath-material; but the following observations indicate that *Aphis craccivora* Koch does in fact produce two types of salivary secretion.

The insects were cemented by the dorsum to a pinhead, anæsthetized with carbon dioxide, and secured so that the stylets, which were first slipped out of the rostrum, lay flat on a clean, dry glass surface. It was observed under the microscope that as soon as the insect became active again, the contents of the food-canal were suddenly sucked back, leaving the canal totally or partially filled with air. The mandibles would then begin to slide backwards and forwards over the maxillæ, and almost invariably a highly viscous secretion was discharged in a manner suggesting the extrusion of artists' oil paint from a tube. This secretion solidified almost immediately it left the stylets and was evidently sheath material. Occasionally, it was also possible to see sudden flushes of watery liquid issuing from the tip of the stylets, but the most convincing evidence that another secretion was produced was the sudden sucking back of liquid up the empty food-canal. The rapid movement of this liquid and its appearance at times when no sheath material was being discharged precluded the possibility that it was the latter secretion. Further, since no liquid passed down the food-canal, regurgitation of gut contents could not have occurred. It is evident, therefore, that *Aphis craccivora*, similarly to Heteroptera, secretes a watery saliva distinct from the material which forms the stylet-sheath.

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[1] Carter, W., *J. Econ. Ent.*, **38**, 335 (1945).
[2] Bennett, C. W., *J. Agric. Res.*, **48**, 665 (1934).
[3] Miles, P. W., *J. Insect Physiol.* (in the press).
[4] Storey, H. H., *Proc. Roy. Soc.* B, **127**, 526 (1939).
[5] Day, M. F., Irzykiewicz, H., and McKinnon, A., *Aust. J. Sci. Res.*, B, **5**, 128 (1952).
[6] Day, M. F., and Irzykiewicz, H., *Aust. J. Biol. Sci.*, **7**, 251 (1954).