ON THE FAUNA OF A BROWN FLUX OF AN ELM TREE, *ULMUS PROCERA* SALISB.

By I. ROBINSON

Department of Zoology, University of Sheffield

(With 2 Figures in the Text)

The following observations were made on an elm tree brown flux in Sheffield over a period of about two years. During this time the flux had a continuous existence and carried a fauna which formed a balanced association. The purpose of the investigations was to throw light on the ingredients of this association, its seasonal fluctuations and the interdependence of its members.

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THE FLUX

Records of brown fluxes and their faunas have previously been made by Ludwig (1888); Massee (1897); Ogilvie (1924) and Keilin (1921, 1927). The flux here under consideration owes its existence to an out-pouring of sap from the wound of a branch scar at the height of about 6 ft. above ground-level. The sap oozes continually, though less copiously in winter than in spring and summer. In so doing, it forms a stream over the tree bark varying in width from 9 in. to 1 ft. In this position the substance of the flux develops as a spongy mass which holds the sap emerging from the tree and thus provides a stable micro-aquatic environment to which certain organisms are attracted and in which they live and often breed.

In spring and early summer the flux is dark brown and slimy. In winter, on the other hand, the lower parts are dry and light stone-coloured—features in agreement with the findings of Ogilvie (1924). The pH of the flux material was 8·7 throughout the year. Ogilvie (1924) records a pH of a similar elm flux as 9·0–9·5. Standard tests for starches, sugars, fats and proteins yielded negative results though a polysaccharide, not starch and possibly cellulose, was indicated.

The animals inhabiting the brown flux form a characteristic fauna which is constantly undergoing change throughout the year. The members of this fauna are:

(*a*) The mite *Hericia hericia* Kramer (Tyroglyphidae).

(*b*) The larvae of the following Diptera: *Dasyhelea obscura* Winnertz (Ceratopogonidae), *Aulacigaster leucopeza* (Meigen) (Aulacigasteridae), *Brachyopa insensilis* Collin (Syrphidae), two undetermined species of *Systenus* (Dolichopodidae), one undetermined species of *Phaonia* (Anthomyidae).

(*c*) The Staphylinid beetle *Thamiarea hospita* Maerk.