does not represent a portion of the nymphal forceps abnormally retained from the last instar stage. The instar forceps are much more slender with narrow bases.

The gonads were removed from all of the gynandromorphic earwigs and fixed for cytological study. From a superficial examination at the time of their dissection no conclusions could be drawn as to the irregularities in the morphology of the gonads and the accessory structures. At present I am unable to say whether or not this abnormal condition is accompanied by an abnormal histological development of the gonad, nor have I been able to show that the gynandromorphic forceps are associated with parasitized individuals. Several of these points may be cleared up after the material is sectioned. It is quite probable that gynandromorphic earwigs, especially in the species *F. auricularia,* are fairly common, but the fact that the abnormalities are not conspicuous in the field possibly accounts for their having escaped the attention of observers.

A NOTE ON THE MODE OF DISTRIBUTION OF EARWIGS.

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Interest in the habits of the European earwigs, *Forficula auricularia,* has recently been revived due to its infestation in the region of Portland, Oregon. Some observers, especially in the newspapers, have doubted the harmful effects of the earwig as a pest. Although these insects are probably blamed for damage they have not done, nevertheless their omnivorous habits and ability to live under the most adverse conditions mark them as being potentially harmful. Our native earwigs should not be indicted with the European species, from which they differ in many respects. In the feeding habits of the four native species studied in the laboratory I find them to be essentially beneficial since they show a preference for feeding on other insects.

How rapidly the European earwig will extend its range and whether or not it will ever become a common pest in our inland cities is a matter of conjecture. There is an extensive literature based on observations of this species. Several authors have discussed its means of distribution but apparently one mode has escaped their attention; that is, water.[1]

Especial attention was given to the above item during some laboratory observation on earwigs collected in the locality of Portland, Oregon. The European earwigs are very efficient swimmers, although they probably never take to this mode of locomotion except by accident. Experiments with *F. auricularia* showed it to float as readily as a piece

[1] Earwigs are known to be transported with objects shipped by boat but in this case the insects do not actually come in contact with the water.

of cork and the oily surface of its body seemed to protect it even when submerged for several seconds. Adult females kept floating for 24 hours were as active as they were when placed in the water. Nymphs were drowned after a few hours, while mature males were nearly as resistant to the effects of water as the females.

Earwigs cluster under objects such as leaves, sticks and paper which are easily washed into gutters and streams during rains. It is quite probable that these floating objects often carry earwigs a great distance and deposit them in new regions, thus extending their range. The fact that the earwigs may be submerged for several seconds without injury suggests the possibility that they may even pass for some distance through closed sewers without being drowned. These observations seem to indicate that local streams and their tributaries may be factors in the distribution of the European earwig.

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