tissues may verify the correlation between anatomy and mode of transmission, and allow either electrical or chemical transmission to be inferred from the morphology of the junction. This type of inference would be of particular importance for such structures as apical dendrites where direct electrophysiological evidence is difficult to obtain (*8*).

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Tsetse Fly Puparia: A New Collecting Technique

A glossinologist often needs to collect tsetse fly puparia for experimental use. The conventional method is to scratch tsetse breeding soil and collect the puparia brought to view. This method is time-consuming, uneconomical, and not very productive, particularly in an area with a low incidence of the fly. The searchers are unable to detect all puparia present in the soil (*1*). In a second method for separating tsetse puparia from the soil, sieves are used. This method becomes inefficient because of lumping of the soil, which blocks the sieves if the soil is slightly moist.

We tried these techniques when seeking puparia of *Glossina palpalis* (R-D) on the river Lofa, Western Province, Liberia, reported to have a low fly population (*2*), but failed to collect enough puparia to colonize this species. We describe, in this report, a new technique of tsetse puparia collection which enabled us to obtain over 5000 puparia from the same locality.

A 4-gal water barrel, a few sheets of filter paper, and a 2-inch glass vial are supplied as puparia-colecting kits to two collectors who work together. The barrel is filled with river water and carried to the possible breeding sites. Depending on the depth of breeding soil, about 0.5 to 1.5 inches of topsoil are gathered from such sites and examined for puparia by pouring the soil into water. The movement of soil and puparia in reverse directions in the water allows the puparia contained to be separated out on the surface of the water. If the soil is poured slowly almost all the puparia are set free to float, but if the process is carried out rapidly it becomes necessary to disturb the soil gently by hand in order to release the puparia trapped by the mud. The floating puparia are fished out, dried on filter paper, and stored in the glass vial containing a little sand.

The short exposure of puparia to water during collection has no bad effect on the viability of puparia, for 88.5 percent of puparia collected by this method produced live flies, a 4-percent higher emergence than that observed in the case of puparia obtained by hand-picking in the same area.

This method of puparia collection detects all the puparia in the soil examined and can be used as a method of control against this insect.

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Transport of Neurohormones from the Corpora Cardiaca in Insects

Abstract. *Evidence from electron microscope studies of aphid and cockroach nerves, and from the bioassay of extracts of the aortal nerves of cockroaches indicates that some neurohormones are distributed from the corpora cardiaca along nerve axons to their target organs.*

The corpora cardiaca of insects are small ganglia which are situated immediately behind the brain and connected to it by nerves. From the corpora cardiaca, nerves have been traced in various insects to the alimentary canal, salivary glands, aorta, prothoracic gland, and various muscles (*1*, *2*).

Substances produced by neurosecretory cells in the brain have been shown to pass along nerve axons to the corpora cardiaca from which they are thought to be released into the blood (*3*). In this respect the protocerebrum-corpus cardiacum system of insects is considered to be analogous to the hypothalamus-neurohypophysis system of vertebrates and the X organ-sinus gland system of crustacea.

Recent work has suggested that at least some materials may be distributed from the corpora cardiaca along nerve axons. In the fly, secretory material was observed in a nerve passing from the corpora cardiaca to the esophagus (*4*); in the cockroach it has been shown by ligaturing experiments that material passes along nerves from the corpora cardiaca to the subesophageal ganglion (*5*); and, in aphids, material staining with paraldehyde fuchsin and believed to be secretory material was traced from the corpora cardiaca along the aortal nerves and along nerves passing to muscles (*2*).

We have therefore studied the nerves leaving the corpora cardiaca in several groups of insects using paraldehyde fuchsin stain for neurosecretory material. Under the compound microscope no material was found in any of these nerves, although large amounts were sometimes present in the brain and corpora cardiaca.

Extracts of the corpora cardiaca of the cockroach can cause increased rate of heartbeat. One active factor is a peptide which is thought to stimulate the pericardial cells to release an indolalkylamine which, in turn, acts on the