still possible that in the case of sulphonamides with a free $-SO_2NH_2$ group, carbonic anhydrase inhibition may have been masked by the concurrent phosphatase inhibition.

In conclusion, it is pertinent to point out that whereas the dosage used in our experiments was about seven times the therapeutic one, the resulting blood-levels would, however, be still very much lower than the concentration used by Golding and Silver to demonstrate gross phosphatase inhibition *in vitro*.

Further work is in progress on the lines discussed in this communication.

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Insecticidal Sprays and Flying Insects

It has already been reported that insects are comparatively little affected if they remain motionless in an insecticidal spray of droplet size less than 10 microns in diameter¹. However, when they fly

do not spread either on the wings or on the body surface (Fig. 2). Now a few droplets can be seen on the antennae, mouth parts, eyes, halteres and spiracular guard hairs, and the house-fly also collects very many on the ventral side of the abdomen. It remains true to say, however, that by far the largest number of droplets is collected on the wings.

It is not difficult to demonstrate the insecticidal importance of the spray collected on the wings. When the wings of both *Aedes* and *Musca* are removed just after exposure to an oil spray mist, the kill recorded twenty-four hours later is reduced by about 50 per cent in comparison with an unoperated control group.

As is well known, insects use their legs to clean their heads, antennae and wings; and it is, therefore, not surprising to find that droplets which have impacted on these parts are later removed and collect in the first place on the legs (Fig. 3). From the legs the spray may be transferred to the substratum or, as in the case of the fore legs of the house-fly, it may be cleaned off by the proboscis.

Insects which are being exposed to a spray mist commence the cleaning process as soon as an appreciable number of droplets has been collected. As a result, streaks of dyed spray are deposited from the legs and can be seen on the walls of the cage in which the insects are being exposed. In this way much of the spray collected by an insect during flight will be removed and lost to the surroundings. During the process of removal, however, it will be passed over the legs, which in certain cases are known to be favourable sites for the entry of insecticide. The material removed by the proboscis passes through the gut and is apparent there and in the excreta. There is, therefore, the possibility that material collected on the head and its appendages may ultimately act as a stomach poison.

Fig. 1. OIL DROPLETS HELD BETWEEN THE MICROTRICHIA ON THE WINGS OF *Musca domestica*. THEY WERE ACCUMULATED DURING FLIGHT THROUGH AN INSECTICIDAL MIST.

Fig. 2. DROPLETS OF AN AQUEOUS SPRAY ON THE WING OF *Musca* COLLECTED DURING FLIGHT. NOTE THE SPHERICAL FORM IN CONTRAST WITH THE OIL DROPLETS OF FIG. 1.

Fig. 3. DROPLETS SHOWN IN FIG. 2 NOW ENTANGLED IN THE BRISTLES ON THE FIRST TARSAL JOINT OF THE HIND LEG OF *Musca*. THESE DROPLETS HAVE BEEN COMBED FROM THE WING.

through such a mist, the insects collect a very large number of droplets on their wings. This observation has been shown to be true in the case of *Aedes aegypti*, *Musca domestica* and *Drosophila* spp. which have been exposed to both oil and water sprays.

The oil droplets which are collected by the wings do not spread since they are held by the microtrichia (Fig. 1), but on the rest of the body small droplets, applied directly, spread quickly. When the spray consists of a dyed dilute aqueous gum solution the situation is rather different, since the droplets

These observations are being extended, and it is hoped to publish a more detailed account at a later date.

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