

## **Flies and disease. Alan Macfarlane**

In his monumental work on **The Housefly, Its Natural History, Medical Importance and Control**, Luther West quoted an educational pamphlet of 1912 which referred to the housefly as 'the most dangerous insect known.' West commented that 'sanitarians today are still unable to dispute the general truth of this assertion.'<sup>1</sup> Why is it so dangerous? Firstly it is ubiquitous and lives close to humans. 'The housefly is world-wide in its distribution and in close association with human dwellings.'<sup>2</sup> Secondly, it breeds very fast. A figure is quoted that 'A pair of flies beginning operations in April may be progenitive of 191,010,000,000,000,000,000 flies by August. Allowing one-eighth of a cubic inch to a fly, this number would cover the earth 47 feet deep.'<sup>3</sup> We are told that 'From egg to adult fly occupies about three weeks in English summer weather; in the tropics the period may be as short as a week.'<sup>4</sup> It will 'breed in many different substances, (ranging from snuff to spent hops!), of which the only common factor seems to be a moist, fermenting or putrefying condition. Typical examples are (a) the excrement of various animals (pig, horse, calf, man), (b) rotting vegetable matter, especially with a high protein content (seeds, grain), and (c) the heterogeneous mixture which constitutes garbage.'<sup>5</sup> For instance, flies were found to be breeding in about sixty per cent of refuse bins in London and a city in Georgia, U.S.A.<sup>6</sup>

All of this would not be of importance if it were not for the fact that flies carry so many and varied bacteria. Roberts describes how flies may spread 'typhoid and paratyphoid fevers, epidemic diarrhoea, the dysenteries and possibly cholera, anthrax, tuberculosis and other infective disorders.'<sup>7</sup> Riley concludes that 'Flies carry more than a hundred species of pathogenic organisms and are believed to transmit more than sixty-five human and animal diseases.'<sup>8</sup> Their danger to humans is increased by the

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<sup>1</sup>West, **Housefly**, New York 1951, 265

<sup>2</sup>Busvine, *Insects (xerox)*, 191

<sup>3</sup>quoted in May, *Ecology*, 166

<sup>4</sup>Roberts, *Hygiene*, 239

<sup>5</sup>Busvine, *Insects (xerox)*, 192

<sup>6</sup>Busvine, *Insects (xerox)*, 379

<sup>7</sup>Roberts, *Hygiene*, 240

<sup>8</sup>Riley, *Insects (xerox)*, 850

number, as well as the range, of bacteria they carry. Thus we are told, for instance, that 'In a study involving 384,193 flies taken in Beijing, China, researchers estimated that, on average, each fly from a slum area carried 3,683,000 bacteria and each fly from the cleanest district carried 1,941,000.<sup>9</sup> They carry such large numbers that the critical mass to infect foodstuffs is always available.<sup>10</sup> The flies' feeding habits and the way in which it transfers bacteria also contribute to its lethal power. 'The fly is especially well suited to provide a means of transportation of shigellae and other agents living in excreta. Its proboscis is covered with an abundance of fine hair that collects germs as it picks up food from the surrounding filth. The feet are also covered with hair secreting a glue, which adds to their ability to collect microscopic organisms. Because the fly commonly feeds on excreta, its vomit and droppings contain an abundance of shigellae if any were present in its meal.' It thus carries bacteria on its body, vomits frequently, and excretes probably every five minutes or so.<sup>11</sup> Since it is particularly attracted to 'all sorts of foods used by man, especially milk, butter and cheese...meat and fish...as well as human perspiration'<sup>12</sup>, its negative health effects can be enormous.

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<sup>9</sup>Riley, *Insects* (xerox), 851

<sup>10</sup>ibid, 851

<sup>11</sup>Busvine, *Insects* (xerox), 197

<sup>12</sup>idem